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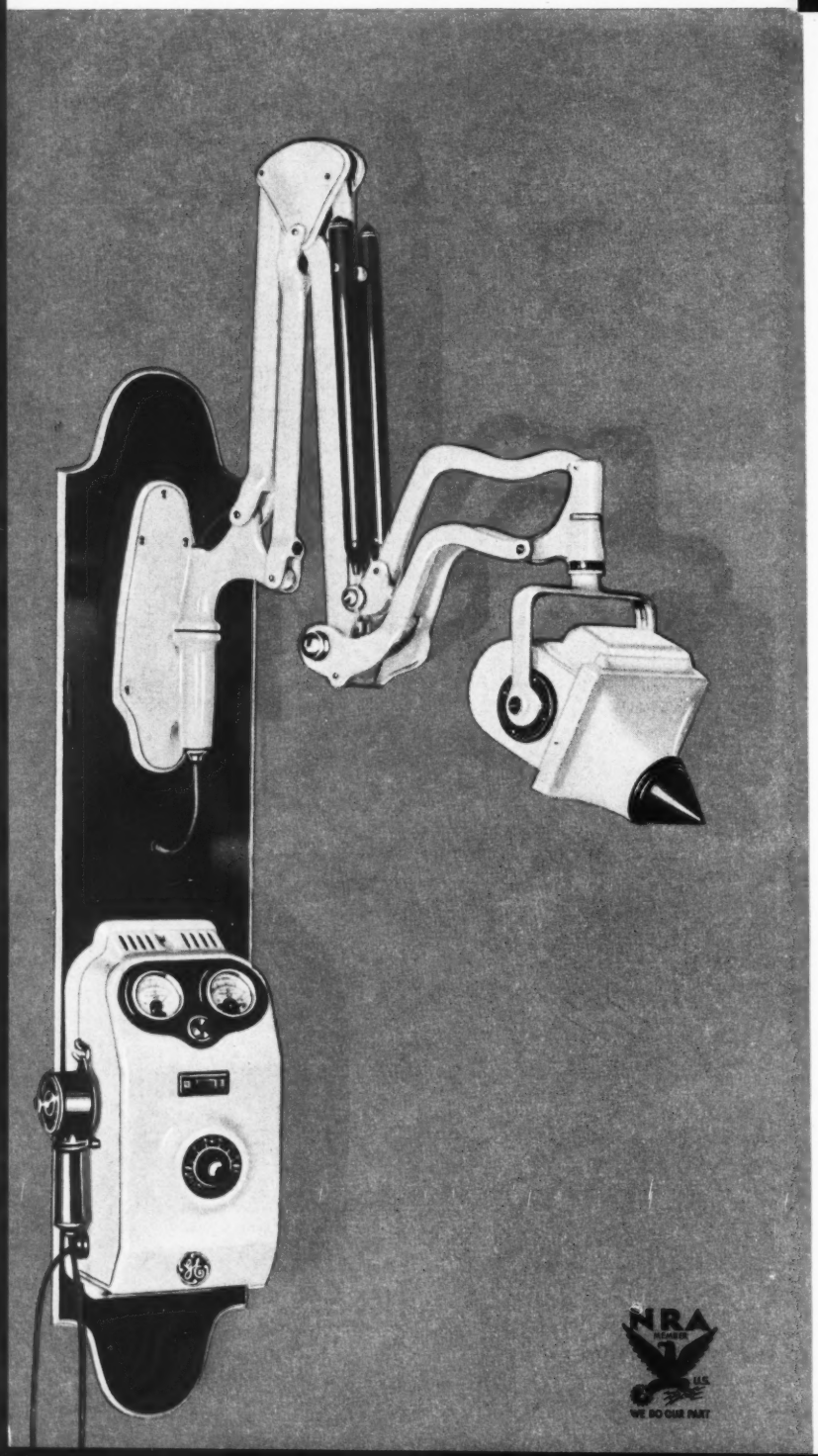

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The DENTAL DIGEST

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MINERAL STAINS IN THE CONSTRUCTION OF DENTURES

IRVING R. HARDY, D.M.D.
New York

PRACTITIONERS of dentistry who are making efforts to perfect themselves in the art of full or partial denture prosthesis are becoming more and more conscious of the fact that there is often a marked deficiency in the appearance of their appliances, and that while the dentures function acceptably, because of the painstaking effort and exacting technique that has been employed in their construction, this good effect is in no small measure nullified by the lack of a proper esthetic result. The patient is, of course, vitally interested in having a denture that is natural looking, for, while the efficiency of the denture is of concern only to the wearer and the dentist who constructed it, the appearance of the restoration is the object of comment and criticism from the patient's family and friends. It therefore behooves the operator to produce an appliance that is at least as correct esthetically as it is mechanically, in order that the patient may be spared the embarrassment that must be felt by any sensitive person who feels that his artificial teeth look obviously artificial.

I believe that one of the best available aids for producing harmonious results in either full or partial dentures is the proper use of mineral stains for shading and coloring the porcelain teeth. The teeth obtainable today are far superior in color and mold to most of those used only a few years ago, but to me they still seem to be distinctly lacking in individuality; that is to say, stock porcelain teeth, especially if employed in a rather symmetrical arrangement, have a distinctly monotonous appearance. The variations in color, sometimes marked, sometimes subtle, which the natural teeth possess, are not present in the artificial teeth; but these variations in color can be reproduced with a reasonable degree of accuracy on the stock porcelain teeth by the proper use of mineral stains. The field of imitation is not limited. The blue tips or blue-gray incisal edges; the white spots; the yellow or yellow-brown splotches; the areas of erosion or abrasion which result in color changes; the enamel checks which are so often shown as brown lines running vertically on the tooth surface; discolorations from restorations—all these can be simulated by the use of mineral stains, and by such measures the monotonous and unnatural effect too often seen in dentures can be avoided.

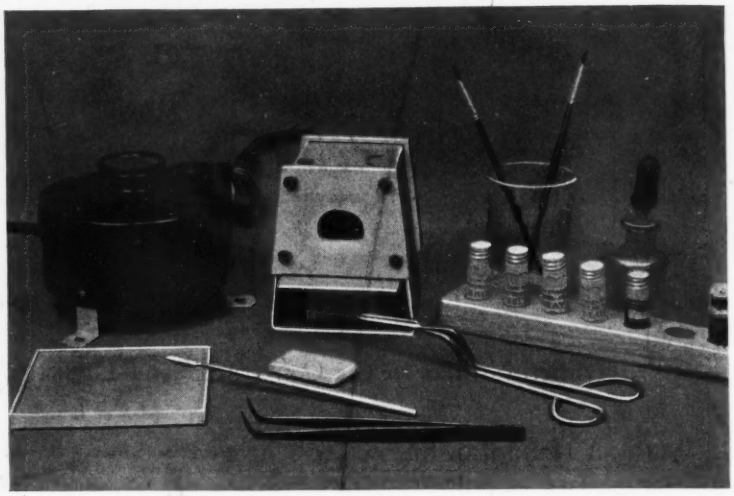


Fig. 1—Equipment for staining. The rheostat for heat control, the furnace, brushes, bottle of distilled water with dropper, glass slab and spatula, fire clay tray, cotton pliers fo grasping teeth, tongs for inserting tray in furnace, bottles of stains (which are here shown set into wood block receptacle which prevents them from being easily tipped over and guards against resulting loss by spilling).

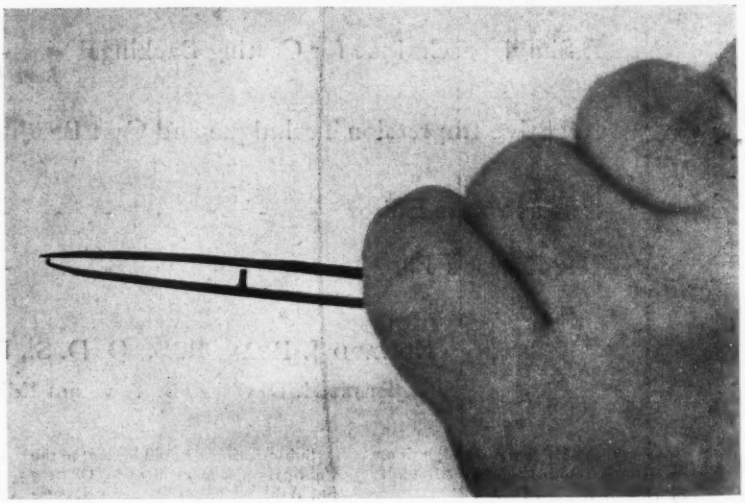


Fig. 2—A pair of cotton pliers, one beak of which has been bent at right angles to the other to afford a better grip on a diatoric tooth.

It requires only practice to perfect the technique herein described. The equipment necessary is not expensive (Fig. 1), and its employment will produce work that is incomparably better than can be achieved by the use of only unaltered stock teeth, and moreover, the work is fascinating and fun to do.

Preliminary Procedure

Since this article deals primarily with staining and coloring, it is assumed that a full or partial denture

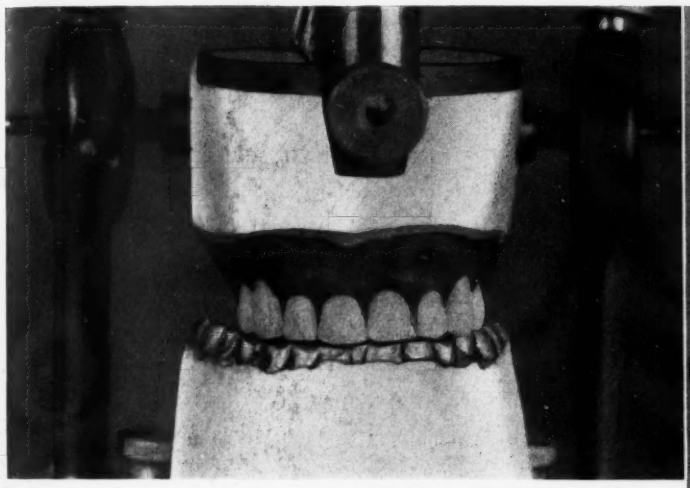


Fig. 3—The teeth set up in wax as they appear after having been tried in the mouth, and the tooth form and tooth arrangement have been pronounced satisfactory.

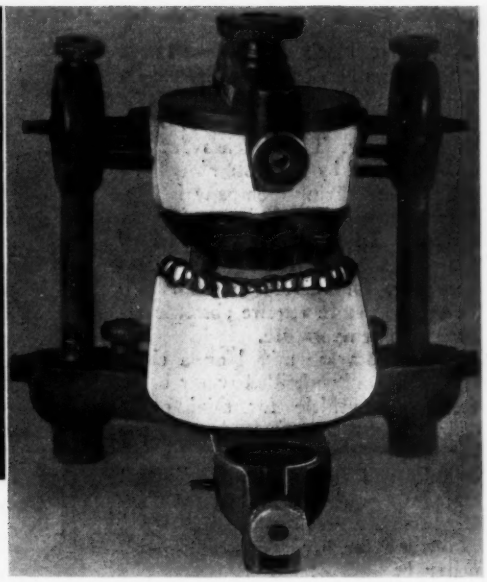


Fig. 4—The six anterior teeth have been warmed with a small flame, carefully removed from the wax, leaving well defined sockets into which they are accurately replaced after staining.

Fig. 4

Fig. 5—Grinding off all the glaze on the labial surface and imitating eroded areas and enamel imperfections by grinding.

Fig. 6—Grinding away the sharp incisal edge to imitate the wear which is in evidence in the teeth of middle-aged persons.

has been tried in the mouth with the teeth set in wax and that it is satisfactory in so far as tooth arrangement is concerned (Fig. 3). The trial plate is removed from the mouth, washed and dried, and the wax is warmed just enough to allow the anterior teeth to be loosened and removed in such a manner as to leave a practically undistorted wax socket into which the tooth may be accurately replaced when it is so desired (Fig. 4). These teeth are now ground with stones and the glaze is entirely removed from the labial and approximal surfaces (Fig. 5). At the same time there are ground into the teeth such irregularities of tooth form as it is deemed wise to introduce, and if possible the natural extracted teeth are followed as a guide in the reproduction. The erosion at the necks of the teeth, the abraded and sometimes cupped out incisal edges (so often seen on the lower anteriors), the indentations, grooves, pits and imperfections which are noted in natural teeth are ground into the porcelain (Figs. 6 and 7).

The teeth are then gone over with a rubber Burlew disc which removes bits of carborundum that may adhere to the porcelain (Fig. 8), and the teeth are then boiled in a solution of strong washing soap, such as Oakite or Gold Dust, to remove thoroughly any adhering wax and grit. The teeth are next examined carefully (preferably under magnification) to be sure that they are clean, and they are then ready to be colored with the mineral stains. At the present time I am using the following stains: S. S.

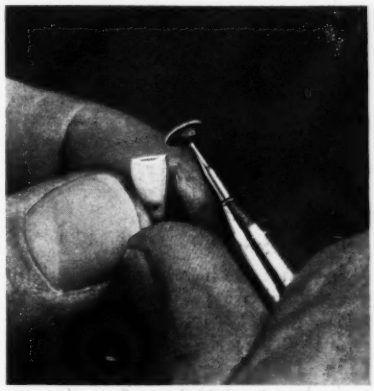


Fig. 7—Cupping out the incisal edge of a lower anterior tooth with a small stone. This is done after the tooth is "aged" by grinding off the sharp incisal edge.

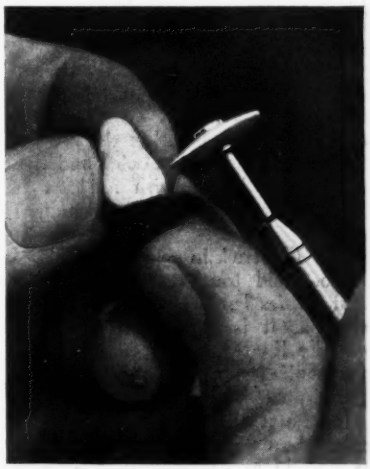


Fig. 8—After all the grinding is done, buffing the ground surfaces with a Burlew wheel to clean the porcelain.

White's 1500°, white, yellow, brown, blue, gray, black and Ash's 1500° white. I am also using an inexpensive furnace and rheostat control made by the Ideal Tooth Company with which to fuse them. The Steele's furnace manufactured by the Columbus Dental Manufacturing Company is likewise acceptable. While a furnace equipped with a pyrometer is, of course, an asset, it is by no means necessary, for this technique is not so exacting as to require absolute accuracy in temperature.

The colors are mixed on a clean glass slab, only distilled water being used as a vehicle for mixing the stains. Many ceramists advocate the use of glycerine and water. In this technique I prefer plain distilled water rather than a mixture of glycerine and water, or oil. I find that I can work much more rapidly with water because of the fact that the water dries out quickly while other vehicles are slow in drying.

As a hypothetical case, six anterior teeth are to be colored for a comparatively young person for whom as a basic shade number 6 or number 9, T. C. has been selected. One would then probably want to produce on the teeth blue or gray incisal edges with splotches of yellow, especially near the neck, and white spots here or there on the labial surface.

Technique for Staining

1. The tooth to be colored is grasped with a pair of cotton pliers which have been slightly altered to afford a better grip on the tooth (Fig. 2).

2. With a fine camel's hair brush the tip color is painted on, heaviest on the mesio-incisal and disto-incisal angles and at these points carried nearly half way up the tooth; then dipping down abruptly nearly to the incisal edge, and rising again about one-fourth way up the tooth in the developmental grooves (Fig. 10).

3. This color is composed of gray and blue stain mixed together in almost equal amounts, but the mixture is too concentrated in color and it is, therefore, diluted with at least 50 per cent of white stain to tone it down.

4. The trick in applying this color is to avoid too great concentration and to feather off the edge of the stain as it is applied to avoid any definite line of demarcation between the applied stain and the underlying porcelain.

5. Next the yellow splotches are painted on the surface and the yellow is applied at the neck of the tooth. For this purpose the yellow stain is, to my eye, too "canary" in color and I modify it by mixing with it a little brown stain. The color is applied with the same brush used to apply the tip stain, the brush being quickly rinsed free of the blue stain before being dipped in the yellow. It might be remarked here that the matter of color is, of course, a more or less personal interpretation and any blending of color here described is susceptible to great variation to suit the operator's and patient's particular tastes.

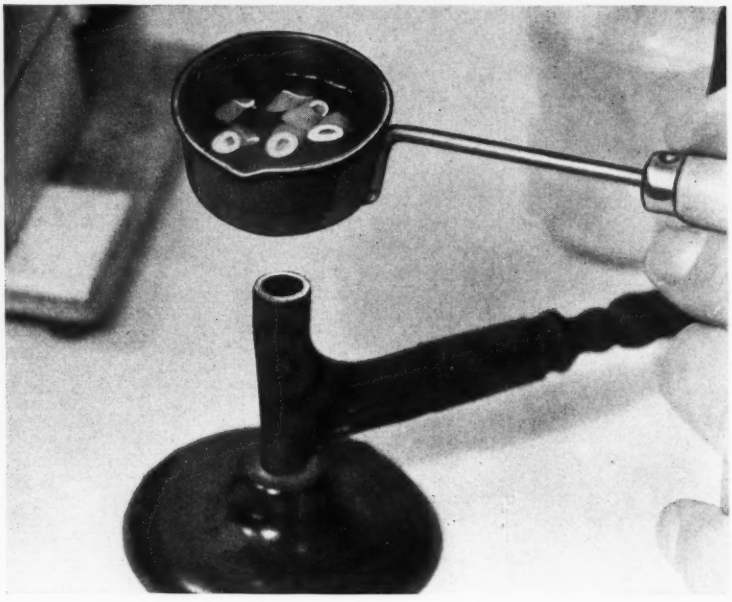


Fig. 9—Boiling the teeth in a solution of Oakite and water to clean them further and remove all grease preparatory to staining.

6. The white specks or spots are also added; Ash's white is used, and if some of the yellow and white areas mix or blend a little so much the better, for they do so in the natural teeth.

One combination of color which is often effective is accomplished in this manner: A spot of white, which is, of course, irregular in outline but roughly between half a millimeter and a millimeter in diameter, is placed on the tooth surface, a good location being near the incisal edge. Directly into this spot is introduced a bit of yellow stain. The two colors will flow together to some extent and will leave a little white surrounding a yellow-tinted center. The effect is extremely natural (Fig. 11).

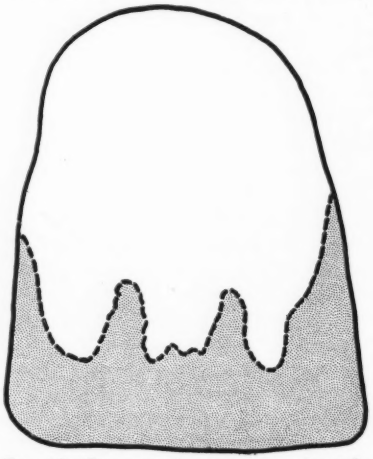


Fig. 10—Diagram showing approximately the distribution of the blue-gray tip color on an upper incisor.

7. A little yellow-brown may be applied to the incisal edge of the tooth if there has been any appreciable amount of incisal wear, and if at one point the color is allowed to flow forward and slightly upward on to the labial surface where it will blend into the previously applied blue tints the effect is good.

I find that colors will often flow and blend together on a tooth surface in effects far more natural than I can achieve by attempting to place them in exactly the right position with my brush. If after a particular spot of color is applied, it appears too concentrated, I often pick up a little water on the brush, apply it to the concentrated spot, and let the water spread and dissipate the color instead of attempting to brush it out.

8. The tooth is now held in front of the open door of the hot furnace for a moment to dry the stain (Fig. 12).

9. It is then placed carefully on a silex covered fire-clay tray, large enough in this case to accommodate six teeth.

10. The remaining teeth to be colored are painted with the required stains and care is taken to produce the

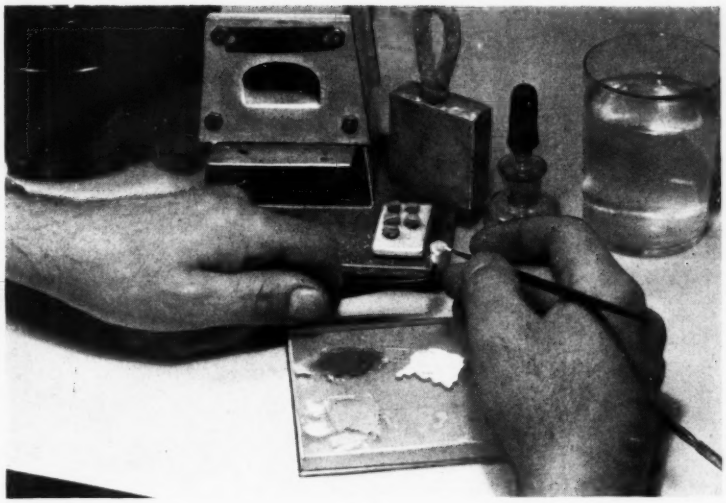


Fig. 11

Fig. 11—Painting the stains on the porcelain teeth with a fine camel's hair brush. The glass mixing slab, with the blended colors thereon, shows in the foreground.

Fig. 12—Holding a tooth in front of the open door of the hot furnace a moment to dry the wet stains before placing the tooth on the firing tray.

Fig. 13—Six anterior teeth in place in the silex covered fire-clay tray being introduced into the hot furnace with the tongs. Following this procedure the asbestos block door is put into place and the tray and teeth left undisturbed from five to seven minutes with the temperature at 1500° F.

desired effect of individuality by shading each tooth differently.

In this type of case it will be found that only slight differences in depth of shade and placing of color will produce effects that will counteract the markedly monotonous appearance characteristic of unaltered stock teeth. To be more specific, the proper amount of differentiation in the central incisors is obtained by running the blue-gray tip of the left higher than the right, by introducing a white spot tinged with yellow-brown on one, or by imitating a synthetic porcelain restoration on one, and not on the other. By similar treatment the laterals and cuspids are tinted so as not to be too nearly exact pairs.

11. All six teeth having now been placed on the fire-clay tray, each carefully embedded in the silex and with no one tooth touching another,

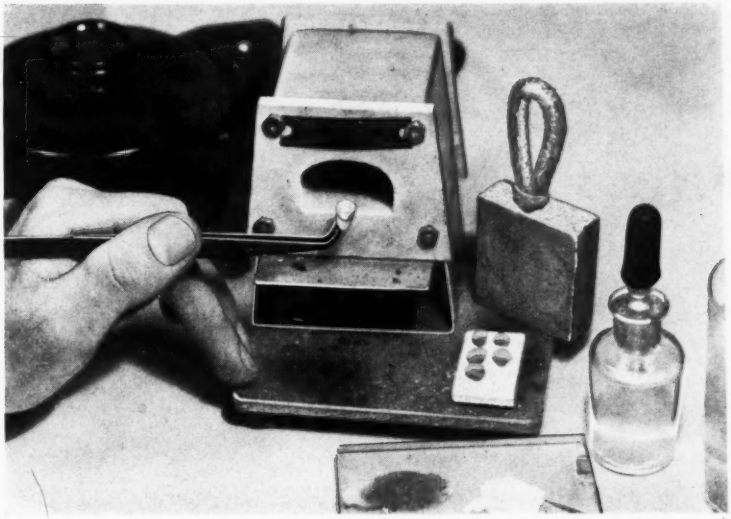


Fig. 12

Fig. 13

the tray is grasped with suitable pliers (Fig. 13) and introduced into the furnace. It is first placed just far enough into the opening to remain there without tipping or tilting and is left in this position for a minute to heat gradually. It is then introduced as deeply as possible into the retort, the door is put in place, and the tray is left undisturbed for five minutes.

The S. S. White fire-clay which is used measures 1 by 1⅝ inches and is reinforced along its edges with a low rim or bead. This rim is ground off on one end of the tray to afford the tongs a secure grip when introducing it into the furnace or removing it therefrom, for if the tray should tilt or jiggle, the result might mean the spilling of the teeth which are embedded in the silex, but by no means securely held there.

12. At the expiration of the five

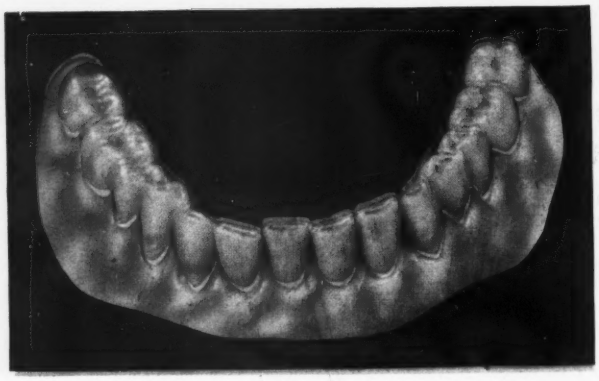


Fig. 17

Fig. 17—An effective method of coloring teeth on a full lower denture. The incisal stains, as shown, are nearly always present in some degree in the natural teeth of middle-aged patients. In the mouth, artistic coloring makes such dentures extremely natural looking and difficult to detect as artificial.

Fig. 18—The completed denture. This case was constructed for a man of middle age and the form, arrangement, and coloring of his natural teeth were carefully reproduced.

Fig. 19—The process of staining with T. C. No. 9 used as a basic shade. At the extreme left is the stock tooth. To the right is the same tooth ground to receive the stains. Next is the tooth after staining, and at the extreme right the glaze has been applied over the stains. This is the type of work generally done for younger patients, especially women.

Fig. 20—The process of staining with T. C. No. 21 used as the basic shade. This type of work applies to older patients and to men especially.

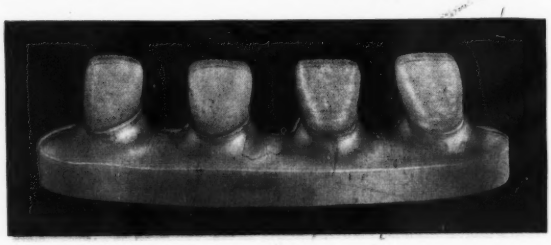


Fig. 19

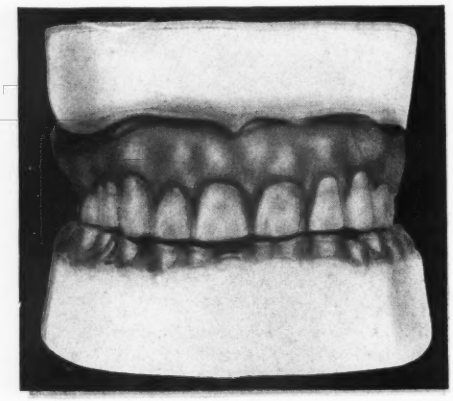


Fig. 18

Fig. 20

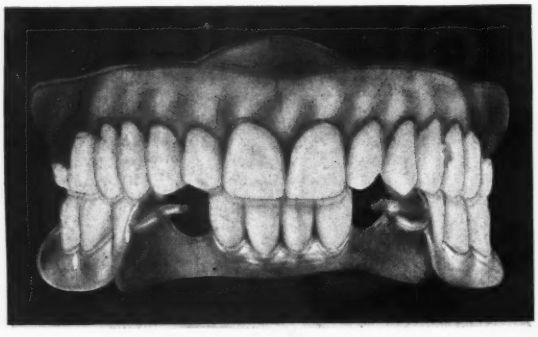


Fig. 21

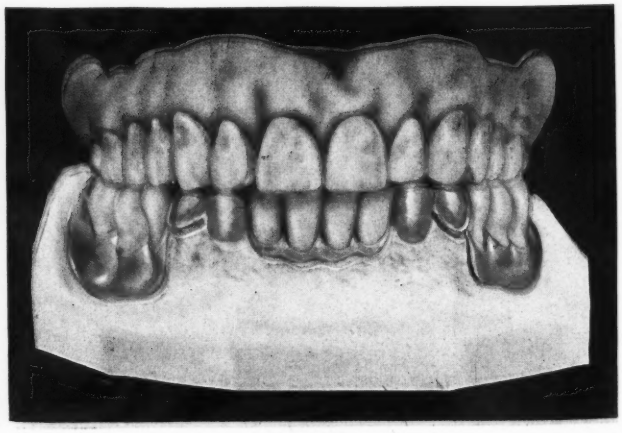


Fig. 22

Fig. 21—A full upper and partial lower denture worn by a patient, aged 65. These teeth in the mouth were artificial in appearance.

Fig. 22—Dentures made to replace those in Fig. 21. The teeth in these dentures have been properly "aged" by suitable grinding and coloring.

minutes the door is removed from the furnace and the tray is taken from the muffle, quickly set on an asbestos slab and *immediately* covered with a metal protector to prevent the teeth from checking (Fig. 14).

13. The teeth will cool in a few minutes and they may then be reset in the wax sockets from which they were removed and tried in the mouth to check the color.

14. The teeth must be kept wet with saliva to show their true color at this time, and if at any particular point too much stain has been applied it may be modified by touching it with a fine carborundum stone, or if more color is needed it can, of course, be added by applying the amount necessary and refiring.

15. If the colors are correct the teeth are again removed from the trial base, carefully cleaned, and they are then ready for glazing.

16. For this purpose of glazing I am using, at the suggestion of Doctor Hubert Kohrman, S. S. White's 1600° glaze, which I find actually fuses at 1500°. This is mixed fairly thick and its particular effectiveness lies in the fact that it can be applied in a layer that is heavy, in contrast to the higher fusing glazes, which if they are applied in a heavy coating become opaque. The advantage in using a heavy coating of glaze overlaid on previously fused stains is that the tints are seen through the glaze and an effect of depth of color which is highly desirable and extremely lifelike is obtained.

The glaze is a powder which is mixed with water as a vehicle and is painted on the porcelain teeth in a rather heavy layer (Fig. 15). It is not necessary or even desirable to spread the coat on evenly; it is essential only to make sure that all surfaces of the tooth which have been previously ground are liberally covered, for any inequalities in the application of the glaze tend to even out somewhat during the fusing process, and such irregularities as may remain after firing tend to modify what might otherwise be too even and unbroken a surface.

17. Each tooth after it has been coated with the wet glaze is held with the cotton pliers in front of the open furnace door a moment to dry and is then carefully placed on the silex covered fire-clay tray. Care is taken not to have the teeth touch each other, for if two teeth are in contact they will fuse together when fired. The tray with the teeth upon it is now placed inside the furnace; the door is put into place after the lapse of a minute, and in five minutes the glaze will be fuzed, and the tray

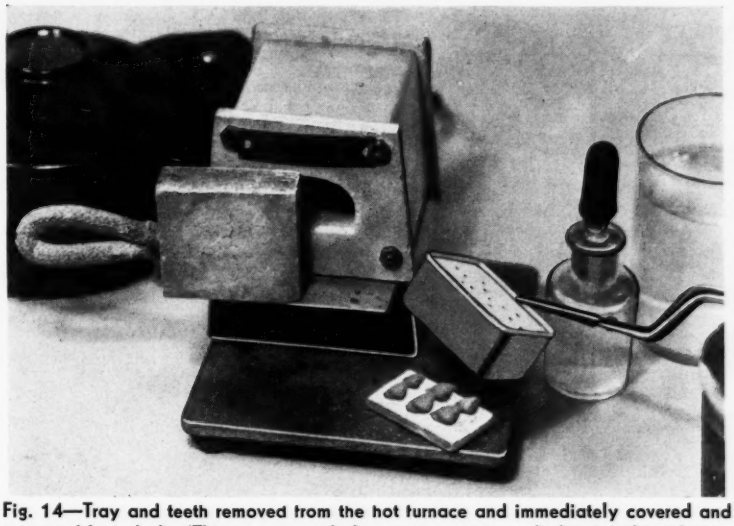


Fig. 14—Tray and teeth removed from the hot furnace and immediately covered and protected from drafts. (This cover is made from a tin container which is just the right size to fit nicely over the tray.)

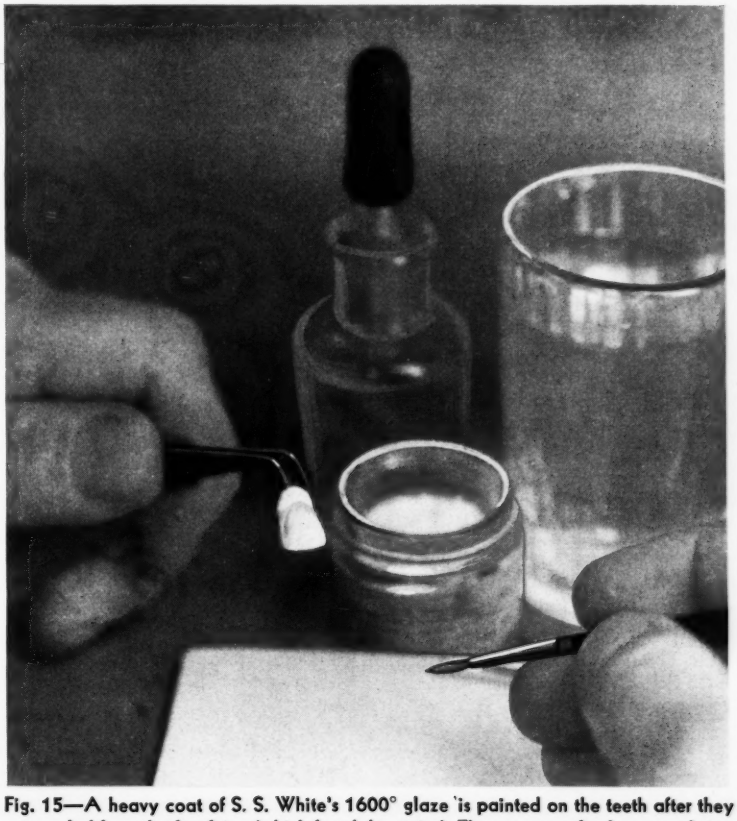


Fig. 15—A heavy coat of S. S. White's 1600° glaze is painted on the teeth after they are cooled from the first firing (which fused the stains). They are now fired a second time to fuse the glaze.

together with the teeth may be removed from the furnace and carefully protected from drafts as they were when the stains were applied.

18. After the teeth have cooled they are examined with a glass; if any pits are seen in the glaze a little more glaze is applied over any pitted spots and the teeth are refired.

19. If no pits are present the teeth are taken to the lathe where, a rubber or felt wheel turning at medium speed with plenty of wet pumice being used, the glazed surface is buffed to remove the glassy look that is present when the teeth are first glazed (Fig. 16). When this buffing is completed the teeth will have a soft looking finish which is highly polished but not too mirror-like in

quality; in short, it will have the appearance of a natural tooth.

Staining Teeth for Middle-Aged Patient

If artificial teeth are to be supplied for an older person, let us say for a man of middle age, the basic shade selected would probably range from 16 to 21. The teeth are prepared for staining as usual by proper grinding of the porcelain, and since the natural teeth of an older person are often considerably abraded and eroded, such evidences of wear are simulated by proper grinding of the porcelain. One of the most conspicuous instances of the coloring of an abraded area in the mouth is that found in the cupped-out incisal edges of the lower anterior teeth (Fig. 17). This coloring is one that is easily and effectively imitated by the proper application of stain. These older teeth often have, also, enamel checks which may appear as dark lines running vertically in the labial surface from a point on the incisal edge from half to two-thirds the way to the neck of the tooth (Fig. 18). This line (often brown in color) is imitated by painting it onto the porcelain tooth with a fine brush, starting at the incisal edge and fading it out as it approaches the neck of the tooth. It needs only a little practice to perfect the application of such lines.

There is, as a rule, in these older mouths when the natural teeth are in place a considerable amount of reparative dentistry, and I believe in imitating some of these restorations when I replace the natural teeth with artificial ones. It is simple to imitate restorations of synthetic porcelain by applying white stain for the body of the restoration, "spotting" the white body a little with yellow-brown for discoloration, and, if desired, making a tiny broken line around the restoration with brown to imitate the condition seen around such restorations in the mouth. If gold foil or inlays are to be inserted in the porcelain teeth (and I am a firm believer in their judicious use) the tooth having been previously prepared by proper grinding and the cavity for the foil or inlay prepared, blue-gray stain is applied liberally to the labial surface of the porcelain at the margin of the cavity to give the effect of the gold darkening the enamel by destroying the translucency, or representing the leakage that often occurs around old restorations. I have seen, I will admit, many gold fillings in stock porcelain teeth which attract attention to a denture rather than conceal its artificiality; but gold fillings used in conjunction with artistically applied coloring are, I contend, excellent

Fig. 16—After the glaze is fused the teeth are buffed with plenty of wet pumice against a rubber wheel to tone down the labial surface which, unless this is done, is "glassy" looking.

camouflage, and their intelligent employment is fully justified by the natural appearance of the dentures so created.

In these cases of older patients colors are applied a little more boldly than is done when tinting the lighter-lined teeth of younger patients. One follows as a guide for staining any natural remaining teeth the patient may have, or if such direct guides are lacking, one may introduce typical colorings observed in the natural teeth of other patients of approximately the same age and characteristics.

In selecting the basic shade for the stock teeth to be used for any given case, I find myself leaning toward the following colors: Numbers 5, 6, and 9 T. C. for younger people, and numbers 16, 20, and 21 for older patients. I refer here to anterior teeth. The gray colors, such as 11 and 14, I seldom use, preferring to employ the more yellow basic shades and to apply any additional gray needed at the incisal third with stain. The gray shades of stock teeth appear lifeless and it seems that by using the more yellow basic shades and applying gray or gray-blue tints over the underlying yellow tooth where needed, a much more natural appearance is obtained and the dead look of the light-absorbing, gray-bodied teeth is avoided.

I prefer to use for the anterior upper teeth a diatoric form, although pin teeth may be used. The diatoric tooth has a large bulk of porcelain which allows it to be ground and shaped as is desired, and the absence of pins allows it to be put through the furnace as many times as need be without fear of pin deterioration. Teeth with soldered-in pins may be used and will stand the heat of the furnace well at temperatures up to 1500° (the fusing point of the stains and glaze). I use them for the anterior teeth on lower dentures. Lower teeth, since they are usually much less conspicuous than uppers, are much easier to color, and seldom have to be subjected to more than two firings (one for fusing the stain and the second for the glaze); therefore, I do not hesitate to use them. The upper teeth on a difficult case may need to be fired several times to get the desired appearance; therefore, I prefer to use a tooth that can be subjected to the heat as often as is necessary and still be as strong as it was originally.

(*Figures* 17-22, *inclusive, appear on page* 414).

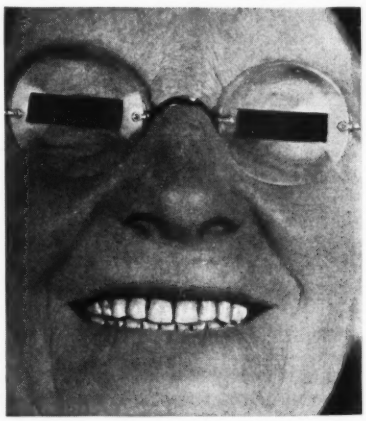


Fig. 23—A full upper denture similar in type to the one shown in Fig. 18, occluding with natural lower teeth. Proper grinding and coloring of the artificial teeth have reproduced a natural looking denture.

Fig. 24.—Close-up of the case shown in Fig. 23 to show detail and harmony of the artificial upper with the natural lower teeth.

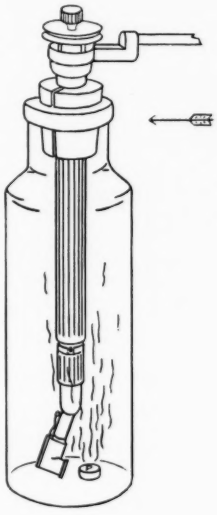
Conclusion

I realize that any description of the application of stains to porcelain herein given is not as graphic as I would wish, but it is, I believe impossible to give written directions that could be followed to the letter for such a procedure. If, however, this article will create interest enough to convince the reader that the technique as outlined is worth a serious trial, I have achieved my purpose, for I am sure that no skilled operator who once really attempts this type of work will ever abandon it. It truly enables the practitioner to lift his denture work out of the false teeth category into what may be properly regarded as an artistic restoration of natural appearance.

2 East Fifty-Fourth Street.

A HANDPIECE STERILIZING BOTTLE

C. FRANK TUMA, D.D.S.
Cleveland



MATERIALS REQUIRED

1. A wide-mouthed bottle. Size about 6 by 2 inches.
2. A rubber stopper to fit. Bore a hole through the stopper to fit the handpiece sheath closely; then split it half way through with a knife.
3. A small rubber stopper.
4. A Paraform tablet (5 grain). Paraform liberates gaseous formaldehyde, a powerful germicide. It will not corrode or tarnish the handpiece.

DIRECTIONS FOR USE

1. Expose the handpiece for ten minutes to the vapor produced from one Paraform tablet (always keep a tablet in the bottle).
2. WHEN NOT IN USE, KEEP THE BOTTLE TIGHTLY CLOSED WITH THE SMALL RUBBER STOPPER.

13201 Miles Avenue

THE RÔLE OF THE GENERAL PRACTITIONER IN THE PREVENTION OF MALOCCLUSION

HOWARD E. STRANGE, D.D.S.
Chicago

DURING recent years there has been an increasing interest in dentistry for children, and there is a great need today for the active participation of every general practitioner in this interesting phase of dentistry. Psychologic management of child patients requires the painstaking application of the ability to recognize differences in emotion and temperament and a keen understanding of how to cope with the various conditions presented for treatment. The orthodontist is a corrective operator, similar to the surgeon in the practice of medicine, and his efforts are concerned with the already developed malocclusion, its contributing causes and the correction of such causative factors. The general practitioner as well as the orthodontist should be vitally interested in the prevention of malocclusion. Neglect of defects in children's teeth and ineffective management and repair of the deciduous dentition in the maintenance of function will invariably lead to malocclusion.

It is safe to say that at least 50 per cent of all cases of malocclusion are caused primarily by the fact that deciduous teeth are extracted long before their normal time of shedding, and no attention is directed to the prevention of the possibilities of what might occur after such teeth are removed. So great is the prevalence of malocclusions that we seem to have accepted them as a necessary evil, and have become so absorbed in remedial measures that we have neglected to study sufficiently the fundamental causes and the prevention of such causative factors by employing preventive dentistry for children.

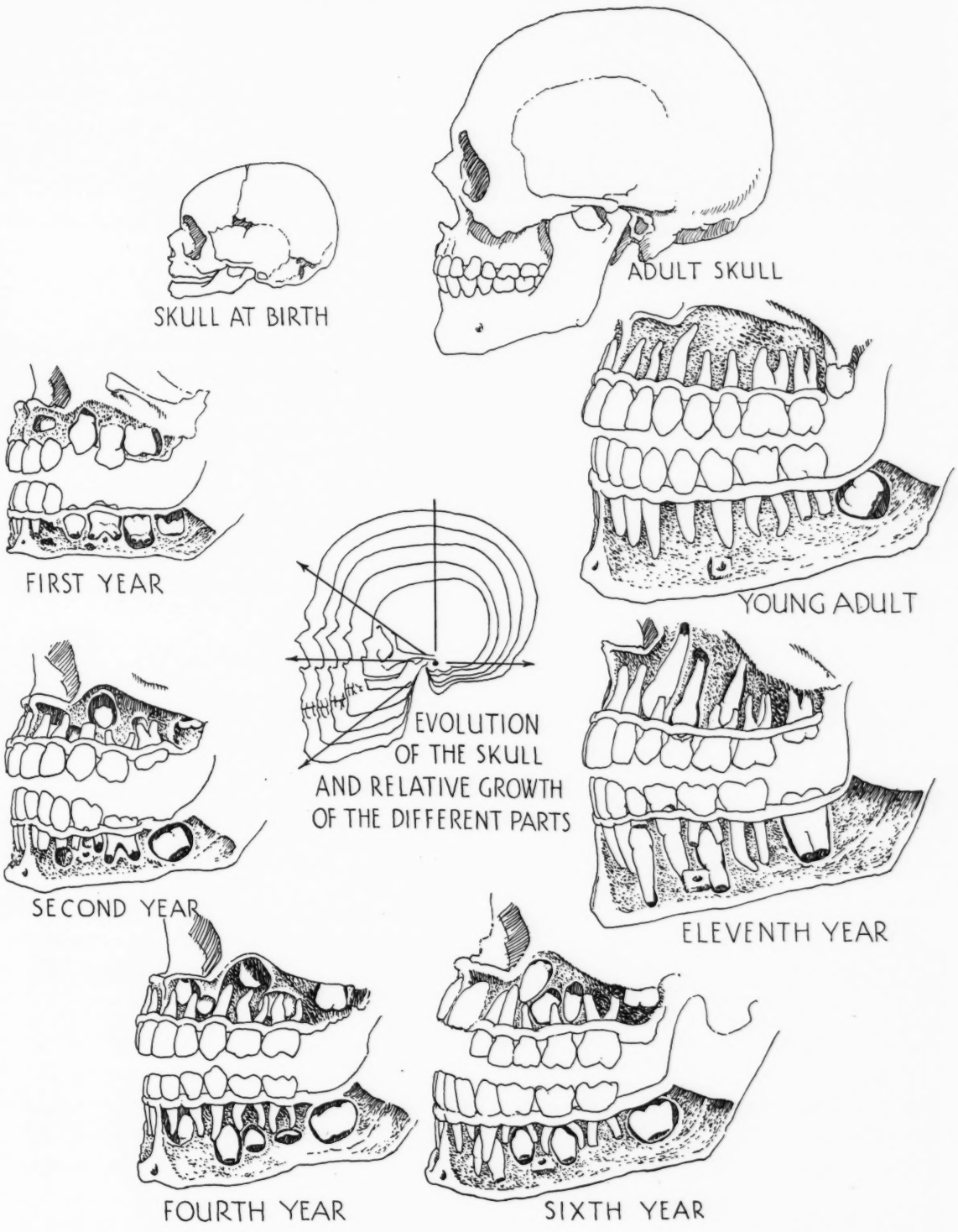
At least 90 per cent of the dentists are in some way including children in their practices. The most common operations performed in the management of the child patient are cement or alloy restorations, probably without regard for proper contour and contact, and the extraction of deciduous teeth. Rightly, infected deciduous teeth, resulting from caries, trauma, or other causes, should be removed. Beyond that the warning of the consequence of neglect of a space resulting after a too early loss of a deciduous tooth has not been sufficiently stressed. Until recent years important factors, such as education of the parents to the facts that healthy deciduous teeth are as important to the growing child as the permanent teeth are to the adult; that deciduous teeth should have identically the same care and attention as the permanent dentition; that their maintenance in good health is essential to proper growth and development of the adult denture and structures pertaining thereto; that periodic care and instruction by the dentist is of paramount importance—these have not been sufficiently stressed by the dentist nor included in a systematic management of the child patient. The dentist must shoulder the task of public education and educate parents to the realization that preventive dentistry commences early in the life of the child. If deciduous teeth are prematurely lost the utilizing of space maintenance as an aid in keeping teeth in proper functional position must of necessity be explained to the parents, and such informative procedure is best accomplished with the assistance of study models and roentgenograms. With such substantiating visual evidence at hand the dentist will find it less difficult to present a clear picture of the case to the parent.

To those who object to the care of child patients I wish to stress the importance of including children in the daily routine of practice. Without question the productive time and effort put forth in educating the parent and child patient can be considered as an economic advantage. In comparison large industrial corporations spend millions of dollars in the process of creating a demand for their product by extensive advertising. The child should be rendered careful, conscientious attention because child patients are great boosters for their dentist and they are the greatest potential practice builders.

In considering the problem of the interception of malocclusion and preventive dentistry for children it is necessary to present a few important facts pertaining to growth and development. If one is not acquainted with the fundamental principles necessary to determine mechanical procedure, he cannot intelligently carry out a successful routine in the management of the child patient. Malocclusion, lack of normal jaw and facial development, and caries are becoming more prevalent. A point of interest is that the uncivilized types in the tropic, subtropic, temperate and frigid zones are not accustomed to the refined and well cooked foods of the more civilized peoples. Their diet requires a maximum amount of functional mastication, a necessary action in the stimulation of proper and normal growth and development of the jaws. As a result, well rounded jaw development occurs, and it is said that there is little evidence of malocclusion and caries. Civilization seems to produce a deleterious effect in that children of the present generation are not required to utilize thorough functional mastication for digestion inasmuch as refined and well cooked foods are prepared.

Metabolism is the physiologic action of furnishing the material for the parts and organs, and function establishes the architecture. Monson states, "Food and function equals force and form." Function works hand in hand with the inherent growth forces and more or less seems to stimulate the action of such unseen forces. The maintenance of adequate functional mastication in the deciduous denture is an important factor in the growth and development of the jaws. The deciduous denture attains most of its development through the combined agency of inherent growth forces and function; as the age of the child increases function plays an increasingly important role.

In the new-born infant the face appears to be only a small part of the entire head. The eyes appear to be in about the center of the head. In the adult the face is approximately one-half and the eyes are located in the upper third of the face. Extensive growth and development of the jaws produces this transformation and the face must of necessity grow about four times as fast as the brain case. The denture and surrounding facial structures (musculature and bone) grow and develop in a lateral, downward and forward direction and the face seems to come out and down


SKULL AT BIRTH
ADULT SKULL
FIRST YEAR
YOUNG ADULT
EVOLUTION
OF THE SKULL
AND RELATIVE GROWTH
OF THE DIFFERENT PARTS
SECOND YEAR
ELEVENTH YEAR
FOURTH YEAR
SIXTH YEAR

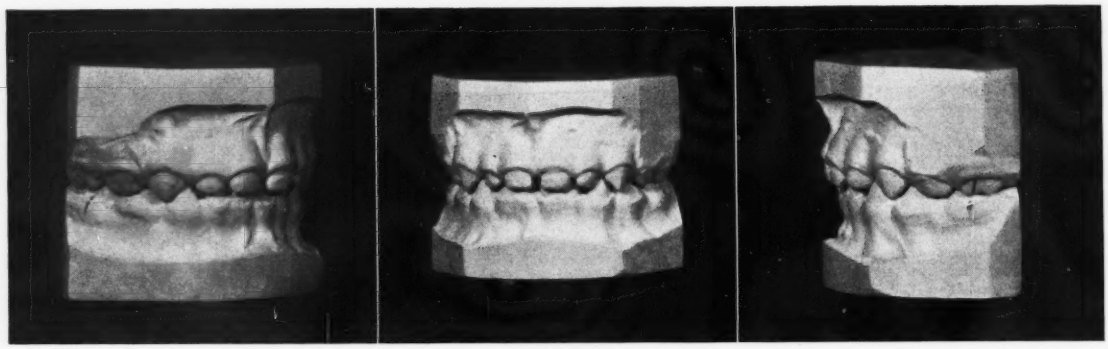


Fig. 1—Cast of a child, aged 2½, indicating the well rounded development of the jaws. The spaces between the deciduous incisors indicate that lateral growth and development of the jaw is progressing in a favorable manner.

from the base of the skull to form adaptional machinery and mechanisms necessary for mastication, deglutition, and breathing. The cranium is a foundation upon which facial growth takes place, and the interaction of the two leads to a downward and forward movement of the maxilla away from the base of the cranium. Where conditions are favorable and normal the mandible grows and develops in coordination with the increase in height and width of the maxilla. It is utilized in the functions of mastication, respiration, speech, deglutition, and acts as a support for the hyoid bone which in turn suports the larynx and throat musculature.

As growth continues in a downward, forward, and lateral direction the development of the first molar tooth germ causes an added growth to take place at the distal of the maxilla. Growth of the mandible occurs by surface addition on the lateral aspect with a corresponding absorption on the lingual aspect of the body and ramus. To furnish adequate space in the body for the development and eruption of the three permanent molars, the ramus of the mandible must be moved distally or the body must develop anteriorly. It has been demonstrated that there is surface addition on the posterior border with absorption on the anterior border which seem to cause a distal movement of the ramus with the body developing forward with the face. The growth and development of the tooth germs and their eruptive expansion cause an added increase in the height of the maxilla and mandible.

Alveolar bone is formed with the eruption of the teeth, and with the eruption of the first permanent molar there is little change in distance in the denture mesial to the first permanent molar. The space or length should be adequate to accommodate the transition from deciduous to permanent teeth. Expanding growth and development of the maxilla and mandible are evidenced by the spaces that appear to develop between the deciduous incisors. This would seem to indicate that Nature is providing adequate room and sufficient bony structure for the support of the permanent incisor teeth, the permanent incisors being wider mesio-distally than the deciduous incisors. Lateral development may occur at different ages and for that reason the dentist must periodically examine the child in order to determine whether or not there will be an overlapping or crowding of the permanent incisors.

The period from 5 to 12 years of age can be termed the period of greatest dental anatomic and physiologic activity, and during this period a tremendous physical development usually takes place. Growth does not go on continuously but the process is an intermittent phenomenon with periods of inactivity interrupted by periods of rest. It is the duty of the dentist to educate or encourage the parent to bring the child to the office periodically in order to aid in the repair and prevention of any defects in Nature's process of working out a delicate equilibrium between erupting and shedding teeth. On observation of growth progressing in a forward direction one can readily understand the ultimate result if no remedial measure is undertaken following the extraction or loss of a deciduous tooth long before the normal time of shedding.

All teeth must be in contact in each arch to maintain the functional efficiency of a masticating apparatus. In the event of a premature loss of a deciduous tooth, there is a gradual

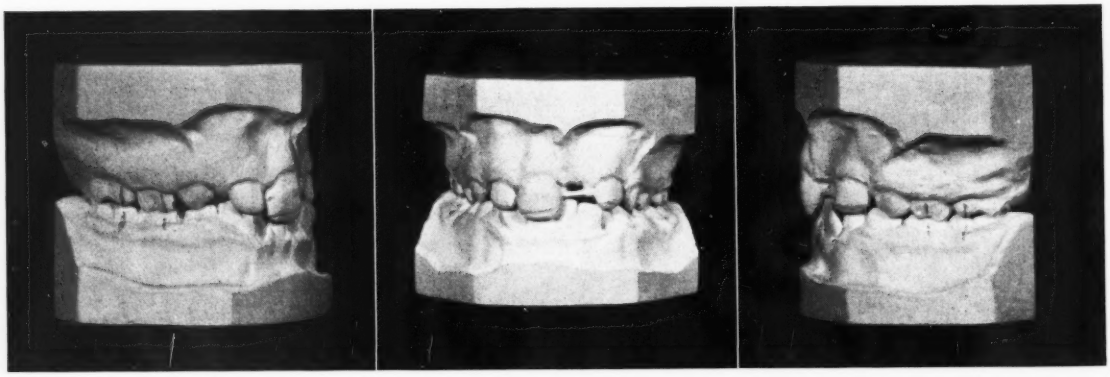


Fig. 2—Casts of a child, aged 7½, demonstrating the injurious effect of the premature loss of the upper right and left deciduous cuspids and first deciduous molars. If space maintainers had been constructed the upper first permanent molars would have remained in proper position and relation and the appliances would have prevented the forward drift of the first permanent molars.

The upper left permanent central incisor was recently lost by accident and the family dentist placed a space retaining appliance which is clearly shown on the casts.

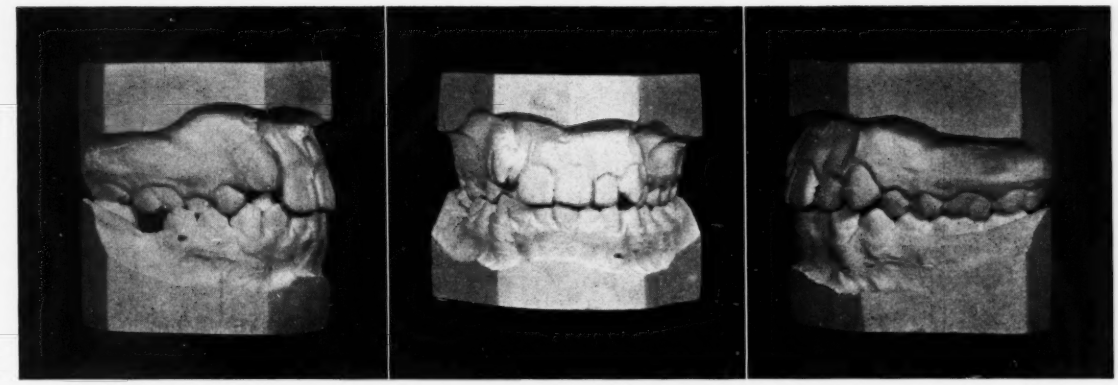


Fig. 3—Casts indicating that the maxillary right molars and premolars have drifted forward because of the premature loss of deciduous teeth. The right cuspid is labial to the lateral incisor. The right lateral incisor is in linguoversion as a result of lack of adequate space caused by the forward drift of molars and premolars.

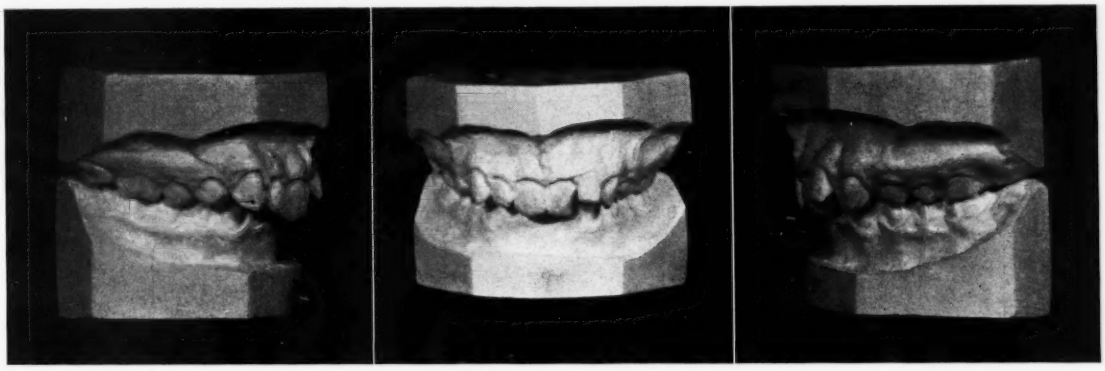


Fig. 4—The teeth in the upper arch have drifted mesial to normal in their relation to the cranium. (Determined by extra-oral and intra-oral observation.) Apparently this condition was primarily due to an early loss of deciduous teeth.

drifting of the teeth into abnormal position and relation. The teeth distal to the space close in and prevent the permanent teeth from erupting, and if they do erupt they are usually in incorrect alinement. Often there is a closing down of the bite and the loss of teeth certainly produces a resulting disturbance in the child's functional occlusion.

Figs. 5, 6 and 7 illustrate a few types of space retainers that may be used in cases in which deciduous teeth are lost long before their normal time of exfoliation. The illustrated simple mechanical procedures are utilized to maintain function and the proper relationship of the surrounding dental structures during the most active period of growth and development, and as a general rule such methods are resorted to where a deciduous tooth is extracted a year or more before the proper time of exfoliation.

Fig. 5, A, B and C illustrate those types of space maintainers indicated where deciduous cuspids and first or second deciduous molars are prematurely lost. Bands, overlays, or molar crowns may be used, but in my opinion the molar crown affords the most secure and stable attachment. The restoration should not be soldered at both ends to the attachments (bands or crowns) fitting on the teeth; the pin fitting into the pontic in B allows a flexibility of the teeth.

E, in Fig. 5 illustrates the abnormal eruption and drift of the first permanent molar after the too early loss of a second deciduous molar. To prevent a tipping forward of the erupting first permanent molar (Fig. 5, F), an attachment is cemented on the first deciduous molar with an arm extending into the tissue and process to guide the molar into proper position as the tooth erupts.

Extensive caries on the mesial and distal of a second deciduous molar is shown in Fig. 5, G. Lack of proper attention or restorations with inadequate contour and contact will allow the molars to tip or drift and close in on the spaces or cavity. Fig. 5, H illustrates an excellent method of maintaining and restoring proper contact. Often in large cavities it is difficult to place a secure restoration and cement restorations gradually dissolve out or break off. A gold platinum band adapted and cemented to the tooth allows the placing of a secure cement or alloy restoration with the assurance of maintaining a proper contact and a fair degree of permanence to the restorations on the mesial and distal of the molar that is affected.

A large cavity is shown in Fig. 5, I, on the distal of the first deciduous molar and a resulting drifting forward of the second deciduous molar. In large cavities in deciduous teeth, particularly in cuspids, it is difficult to retain a large restoration, and Fig. 5, J, shows a molar crown utilized to maintain the large cement restoration.

Technique

The function of the deciduous arch must be maintained and space maintainers should be so constructed as to maintain the space efficiently and yet allow sufficient freedom of movement in the teeth to permit normal function and growth. The technique of construction is simple and is a dental operation that involves little time and difficulty. The attachments are essentially a product of casting or swaging, common operations in every practice, and the technique does not involve a substantial outlay of expense for new equipment to apply the described

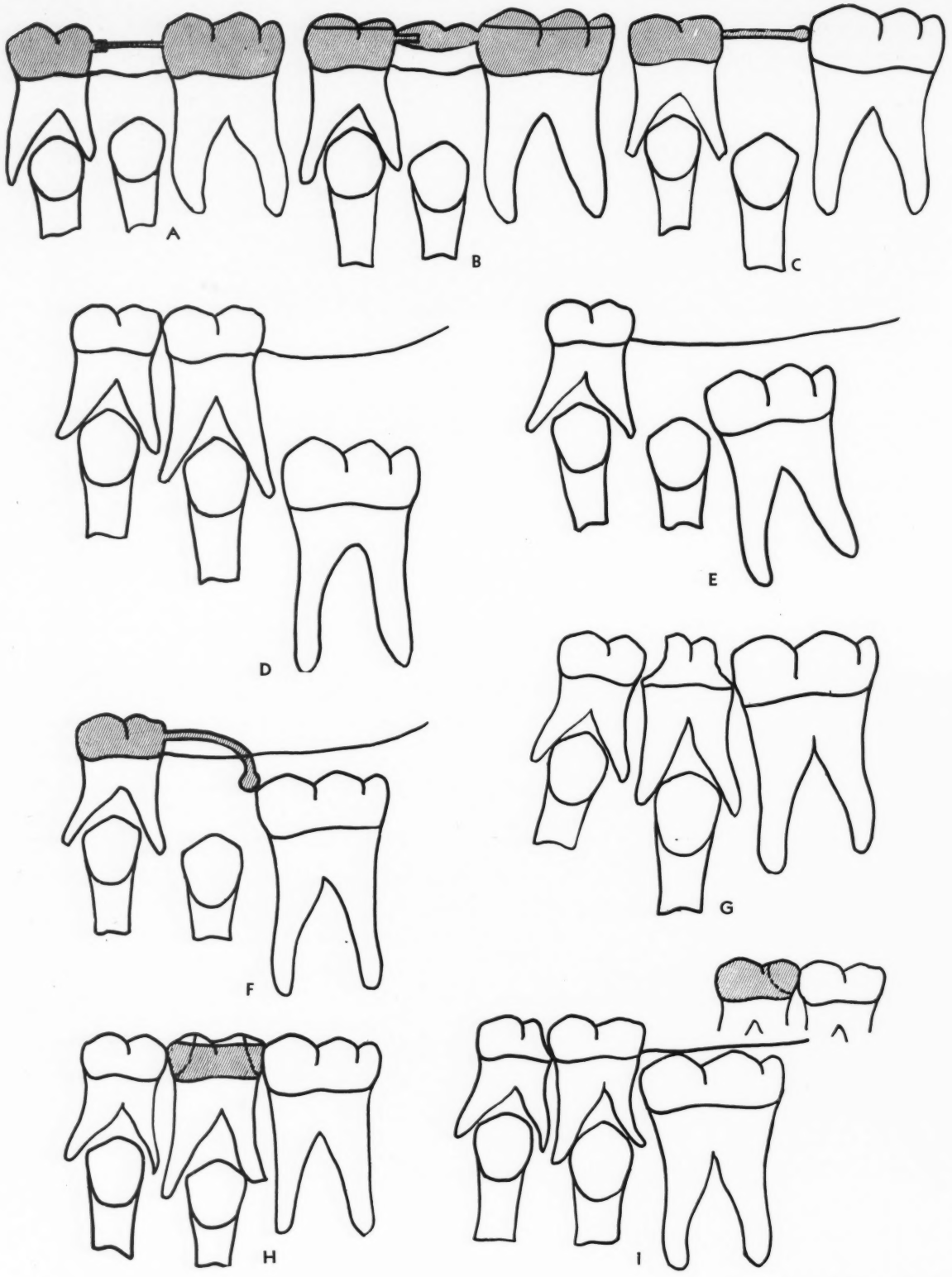


Fig. 5—A, B, and C illustrate types of space maintainers indicated where deciduous cuspids and first or second deciduous molars are prematurely lost; D, shows normal eruption of first permanent molar; E, beginning forward drift of first permanent molar after the too early loss of a second deciduous molar; F, attachment to prevent tipping forward of erupting first permanent molar; G, extensive caries on mesial and distal of a second deciduous molar; H, method of maintaining restorations and restoring proper contact; I, large cavity on distal of first deciduous molar with resulting drifting forward of second deciduous molor; J, molar crown utilized to maintain the large cement restoration.

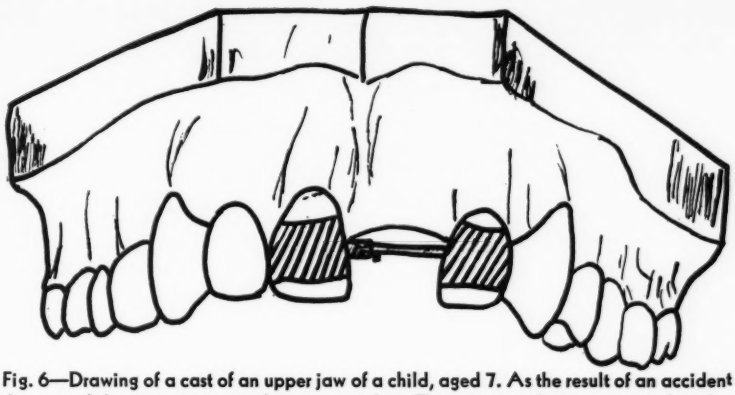


Fig. 6—Drawing of a cast of an upper jaw of a child, aged 7. As the result of an accident the upper left permanent central incisor was lost. The retaining device cemented to the teeth prevents a closing in of the space which might occur if neglected. If no attention is directed to such a problem the teeth distal to the spaces will drift in a mesial direction and narrow the space causing a malocclusion. A porcelain facing may be used to produce a more pleasing esthetic effect and when the child attains the proper age a bridge of a permanent nature is constructed.

methods. In using bands, swaged crowns, or cast overlays no grinding or preparation is necessary on any of the abutment teeth utilized for attachment. In my opinion the swaged crown attachments illustrated in Fig. 7 are effective. Fig. 8 is a detailed illustration of the method of construction from 22 karat gold shells, 30 gauge. The shells are swaged on a base metal die and are contoured and trimmed to fit. One should make sure that the gingival border of the crown does not impinge on or tear the gingival attachment of the gum.

1. A compound impression is taken of the side of the arch involved.
2. A plaster cast is made, and the abutment tooth or teeth are carved as illustrated in Fig. 8. The plaster tooth is trimmed 1 mm. below the free gum margin.
3. The crown is constructed from a gold shell as illustrated in Fig. 8.
4. With the separation made between the teeth in order to fit the attachment properly, contour and trim to fit just below the free margin of the gum.
5. The compound or plaster impression with attachments are placed on the teeth.
6. Pour with a high heat crown and bridge investment, making sure that crown attachments are waxed securely in the impression.
7. In constructing the wire attachment for maintenance of space, a short clasp attachment (.030 or .025 gauge high fusing gold platinum clasp wire) can be adapted on the distal of the first deciduous molar, and then soldered to an arm (.040 gauge high fusing clasp wire).
8. This arm in turn can be soldered on the mesial of the crown on the first permanent molar (Fig. 7).
9. The appliance is removed from the cast, polished, and checked for proper adjustment in the mouth, and

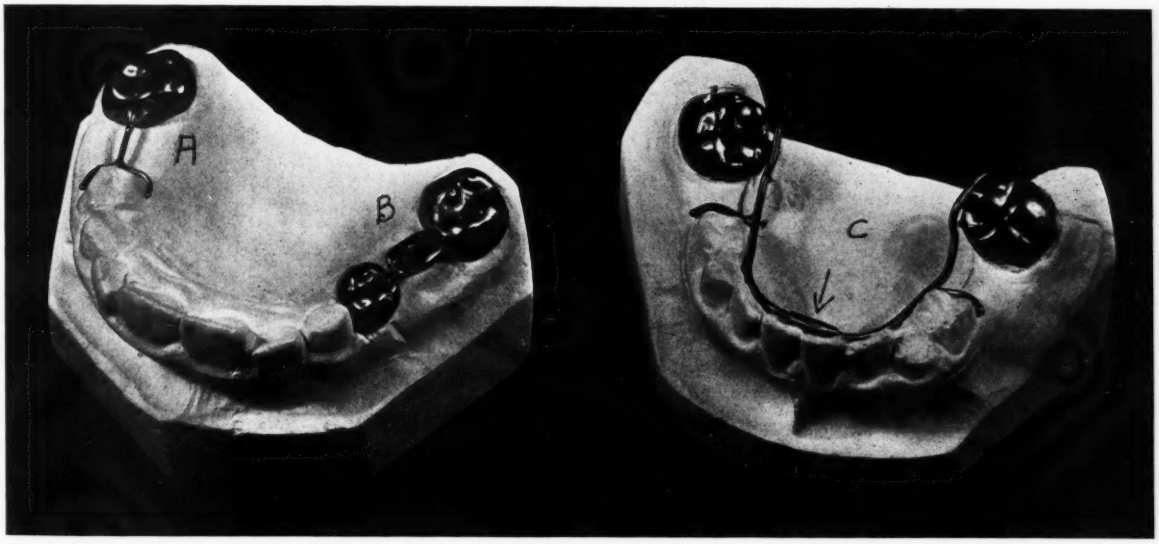
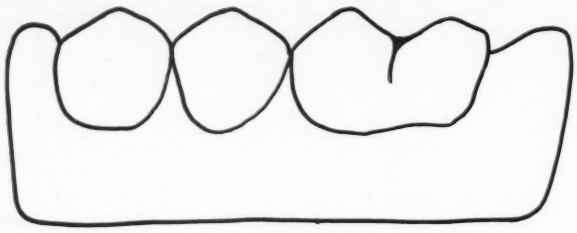


Fig. 7—The casts of the teeth indicate that all four second deciduous molars have been lost in the mouth of a child, aged 7. If the care of these spaces is neglected the first permanent molars will drift in a mesial direction, and with lack of attention after the premature loss of the deciduous teeth a malocclusion will eventually develop. The illustrated space maintainers are an inexpensive insurance against the possibility of a malocclusion developing after the premature loss of deciduous teeth.

Fig. 7, A, is a small wire and clasp appliance attached to a crown cemented on the first permanent molar. The appliance will prevent a mesial drift of the first permanent molar.

Fig. 7, B, is a more elaborate space preserving device, a bridge shown in detail in Fig. 5, B. An appliance of this type is preferred, in addition to maintaining the space the small bridge efficiently maintains the functional relation of the arches in mastication.

Fig. 7, C, illustrates a more elaborate device applied more frequently in the lower jaw. The appliance prevents a forward tipping of the first permanent molars or teeth distal to the space resulting from the premature loss of deciduous teeth. The .040 gauge base wire against the lingual surfaces of the teeth will prevent a distal tipping or drifting of the anterior teeth or the closing down of the bite which may occur after the premature loss of lower deciduous molars. The base wire on one side of the arch fits into a tube on the other side of the arch lingual to the lower central incisors (arrow). This is to prevent any possibility of interference with expanding growth and development of the arch.

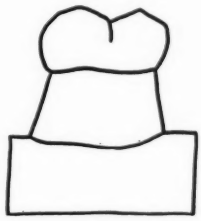


1. Plaster Cast

2. Plaster model carved

3. Plaster model pressed into Mellot's Moldine

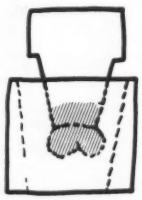
4. Plaster model removed and rubber ring placed for pouring of Mellot's Metal



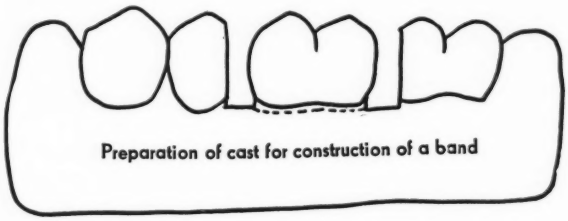
5. Die

6. Wood block and ring

22 Karat 30 gauge gold shells ¼ long - - short



7. Die with gold shell on it driven into wood block encased in ring



Preparation of cast for construction of a band

Fig. 8—The illustrated technical procedure is a simple method the operator may follow in the construction of swaged shell crown attachments:

1. Plaster cast made from a compound impression of that section of the dental arch requiring the use of a space maintainer to maintain the teeth in proper position and relation.

2. The abutment teeth adjacent to the space resulting from the premature loss of the deciduous tooth, or the teeth designated for the attachment of the retaining appliance are cut from the small cast. The plaster under the coronal portion is trimmed to form a tapered base. A tapered base is necessary to assure easy withdrawal of the tooth model after it has been pressed into the moldine.

3. The plaster tooth model is carefully pressed into the moldine and after an impression of sufficient depth is made the model is withdrawn leaving a clear impression of the tooth in the moldine.

4. Place a rubber ring securely on top of the moldine and pour in Melotte's metal.

5. Die ready to fit a short 22 karat, 30 gauge gold shell of proper size. The shell is partly adapted to the die by tapping with a horn mallet to prevent any buckling of the gold when driven into the wood block.

6. The prepared wood block is placed in a metal ring (specially tapered on the inside to receive the tapered wood block) and gold shell is adapted to the die by driving the die with shell crown on coronal portion into the wood block encased in the ring.

7. The die and prepared crown are removed from the wood block. The crown is fitted to the abutment tooth in the mouth and contoured and trimmed to fit just below the free gum margin.

then is cemented to place.

The small wire and clasp space maintainer illustrated in Fig. 7, A, is the simplest appliance, and it is indicated when parents either through lack of funds or lack of desire do not wish a more elaborate space maintaining appliance similar to the bridge constructed on the other side of the arch (Fig. 7, B).

Whenever possible it is advisable to use an appliance with the pontics soldered to one attachment and fitting into a pin soldered to the abutment at the other end of the space. A detailed construction of such an appliance is illustrated in Fig. 5, B, the construction being essentially a product of ordinary crown bridge procedure. If the deciduous teeth are necessarily lost too early the appliances illustrated in Fig. 7 are effective in maintaining a proper position and relation of the jaws and functioning teeth in the active period of growth and development of the child's masticating apparatus. The bridge appliance serves three distinct purposes: (1) preserves the proper space for the normal eruption of the permanent tooth; (2) restores function with the teeth in the opposing arch, and (3) maintains the proper functional masticating efficiency.

Fig. 6 indicates the loss of a permanent central incisor and illustrates one form of space retention necessary to maintain the space until a later age when a permanent bridge restoration may be constructed. Gold platinum alloy orthodontic bands (.005 or .003 gauge) are cemented on the incisors or abutments adjacent to the space and the arm (.030 gauge high fusing clasp wire) soldered to the proximal surface of one band and extends into a tube soldered on the proximal surface of the other band. The arm fitting into the tube attachment allows a certain amount of freedom and flexibility of the abutment teeth.

2376 East Seventy-First Street

Lost permanent anterior teeth may be supplied for esthetic effect by a so-called horseshoe denture, a vulcanite appliance. Such a denture can be constructed by covering a small portion of the palate adjacent to the teeth and with the aid of wire clasps fitting the posterior teeth. Stability and firmness of the denture are thus accomplished or maintained. Whenever possible the construction of a bridge restoration supplying the missing teeth is advisable. Instead of the arm and tube extending between the banded abutment teeth, a .030 gauge high fusing clasp wire is adapted (depending on the bite for location) and soldered to the lingual surface of one band, and received into a tube soldered on the lingual surface of the other. A Steele's backing is soldered to the wire and the facing cemented thereon. The appliance should be examined occasionally, and frequent removal and recementing is necessary for the protection of the abutment teeth.

Spaces resulting from early loss of deciduous incisors may be retained by the described methods, and modern and exacting crown and bridge technique is required. Open-face and three-quarter crowns may be efficiently used on deciduous anterior abutment teeth and they form a secure attachment for space retention in the anterior part of the mouth.

The roentgenogram is an important factor in checking up to determine the progress of growth and development of the jaws and teeth. The character of the problems confronting the dentist certainly demands the frequent use of roentgenograms, and the fact that the masticating apparatus is frequently subject to abnormalities indicates that the roentgenogram is an invaluable aid in determining the growth of the dental arches where development and eruption of the teeth play so important a part.

Indications for Use of Roentgenograms in Dentistry for Children

A few of the common indications for the diagnostic assistance of roentgenograms are: (1) as a guide to the extraction of the deciduous teeth; (2) to observe the development and location of the second and third molars; (3) to differentiate between anomalous and normal teeth (supernumerary teeth); (4) to aid in determining the best procedure or advantageous method of technique; (5) to check up for the presence or absence of unerupted or submerged teeth; and (6) as an aid in carrying out a systematic plan of thorough and complete diagnosis, and case analysis in the practice of preventive dentistry for children.

Conclusion

Through a process of proper education the child of today is gradually demanding the attention of the dentist, and the dentist must come to the realization that preventive dentistry starts early in life. I have explained briefly that economically the proper care of children's teeth, including space maintaining, offers one of the best means for building a practice. Greater than economic considerations, the more potent and main reason is that, after all, dentists are practicing a profession and dentistry for children or the interception of conditions that cause malocclusion is one of the greatest avenues for attaining a professional ideal in fulfilling our obligation to the public at large. In preventing and bringing about the correction of conditions that cause malocclusion, with all its attendant evils later in life, dentists are afforded one fine opportunity to do some genuine good, and they are attaining a pinnacle in the growing present day ideal of preventive dentistry.

ABOUT OUR CONTRIBUTORS

William A. Colburn, D.D.S., is the author of "Classification and Roentgenologic Interpretation of Dental Surgery," which appeared with his professional biography in The Dental Digest, November, 1932.

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Irving Robinson Hardy received his D.M.D. in 1917 from Tufts College Dental School and during the summer of 1928 studied with Doctor Alfred Gysi in Zurich, Switzerland. Doctor Hardy is the author of several professional magazine articles. From 1920 to 1931 he was instructor at Tufts College Dental School where he is now special lecturer in Dental Esthetics. Doctor Hardy is a member of the A.D.A. and the New York Academy of Dentistry, and is associated with Doctor William Dwight Tracy in the general practice of dentistry.

Howard Elliot Strange has his D.D.S. since 1923 from the University of Minnesota School of Dentistry and his M.S.D. from Northwestern University (1928). Doctor Strange is a member of the A.D.A., Chicago Association of Orthodontists, American Society of Orthodontists, and Delta Sigma Delta. Doctor Strange's practice is limited to orthodontia.

A SIMPLE TECHNIQUE FOR CASTING BACKINGS

BERT L. COLE, D.D.S.
St. Paul

BY MEANS of a few simple steps, the following technique can be employed to cast backings for Trupontics, Sanipontics, and Steele's facings:

1. A piece of 20-gauge copper wire about 2 inches long is cut, bent in the middle and shaped as shown in Fig. 1.

2. The incisal edge of the facing is beveled as in Fig. 2. This gives additional protection to the porcelain and tends to prevent breakage.

3. The facing is lubricated with any good lubricant, such as castor oil and coconut oil in equal parts.

4. Inlay wax is warmed, pressed on the facing, and carved to the desired shape. The copper wire is warmed. Slide one end of the wire in the slot in the facing and let the other engage the inlay wax (Fig. 3). The wire is inserted to the full length of the slot.

5. Now slip the facing from the wax. Inlay wax is added with a hot spatula any place that the carving is imperfect. Slip the wax carving back on the facing and check the margins. Then slip the facing off and trim the excess wax from the copper wire to form the tongue.

6. The wax model is washed in a soap solution to remove all the lubricant. Then investing is done as for any inlay. After the investment has hardened, the sprue base is removed; the looped end of the copper wire is cut, and the two wires are removed separately.

Fig. 1

Fig. 1—Copper wire (20-gauge) bent to desired shape.

Fig. 2

Fig. 2—Beveled incisal edge of facing.

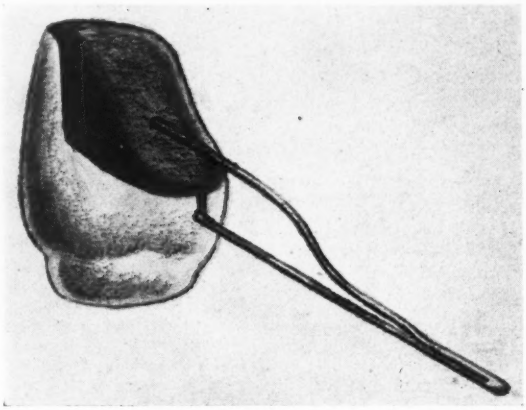

Fig. 3

Fig. 3—One end of wire in slot of facing with other end engaging inlay wax.

Advantages

1. In anterior teeth, beveling of the facing gives additional strength.

2. The method described here simplifies getting the wax off the facing.

3. This technique permits anatomic carvings, which soldering does not.

4. The specific kind of gold can be used as indicated in each individual case.

Incidentally, any cemented facing may be removed by boiling in nitric acid in a test tube from five to ten minutes.

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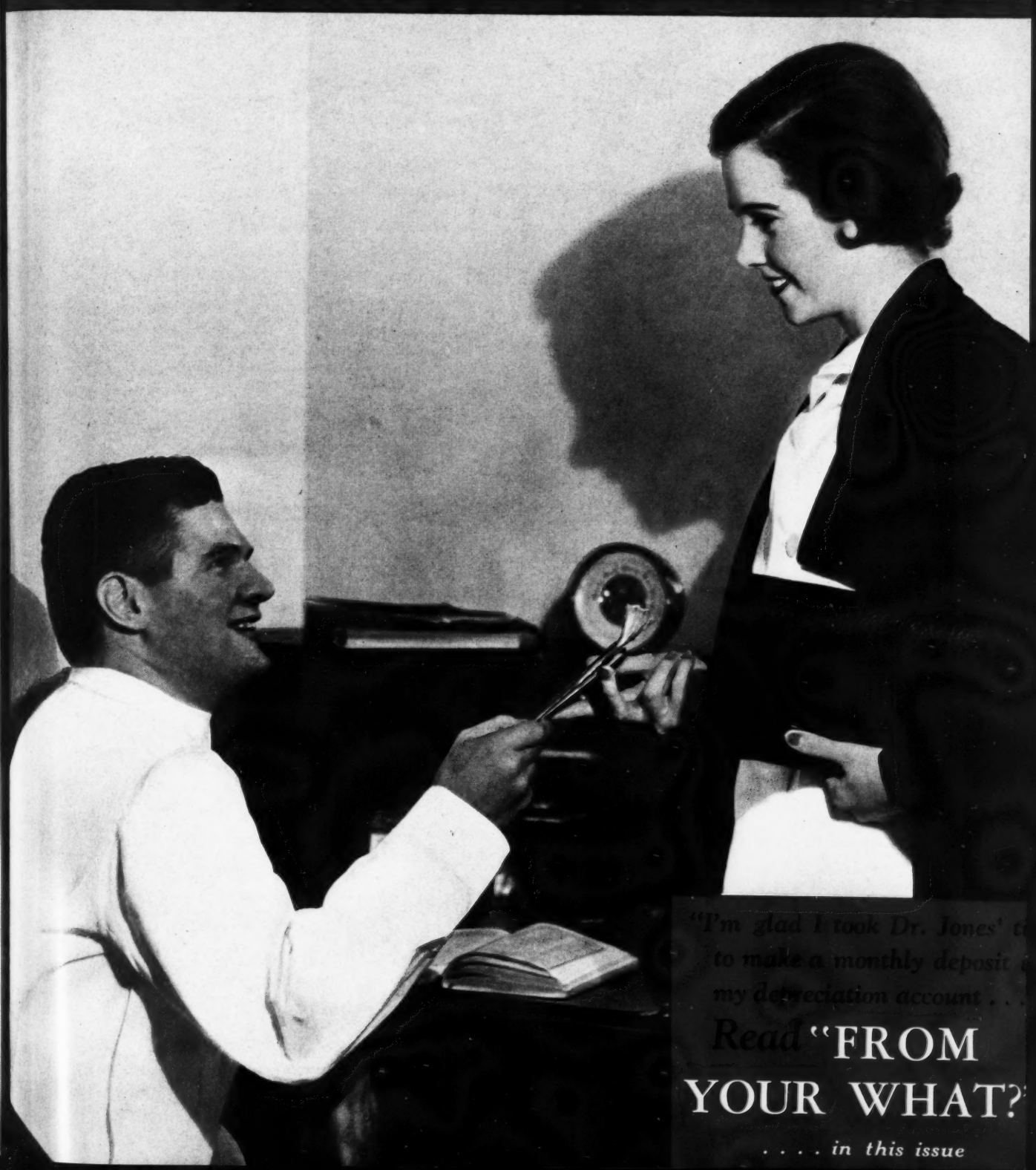
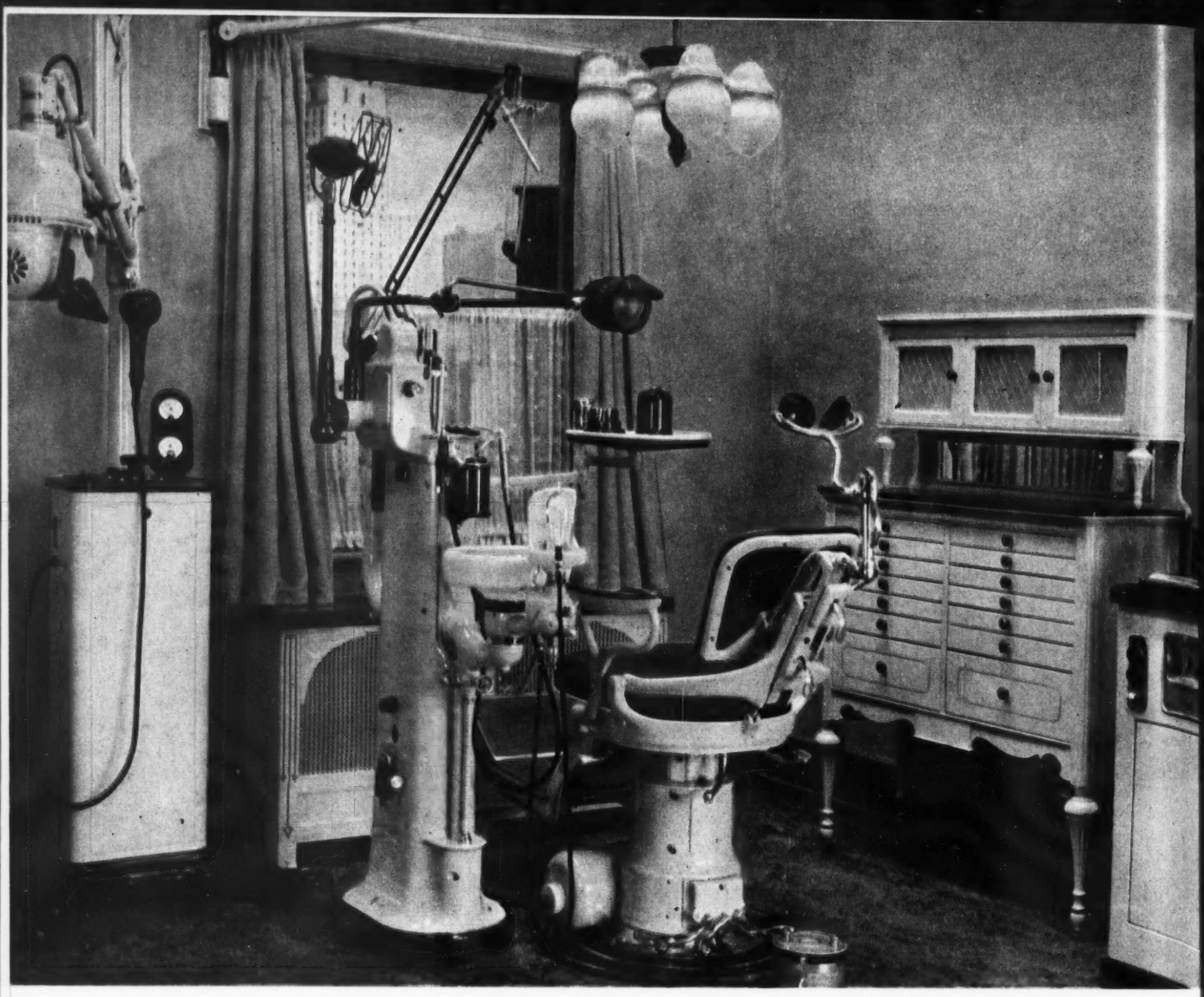
COUNSELOR



"I'm glad I took Dr. Jones' t
to make a monthly deposit
my depreciation account . . .

Read "FROM YOUR WHAT?

. . . . in this issue



DENTISTS *who have been practicing for* 10 YEARS

have found "Depreciation Accounts the Solution to Obsolescence"

Successful dentists have found that depositi a pre-determined amount each month in a speci depreciation account is the surest solution to t problem of the progressive obsolescence of the equipment. Such procedure repays them for t original investment made when they began practice . . . and enables them to keep abrea with the newest developments in dental equi ment without taxing their reserves when repla ment is necessary.

The depreciation account is a recognized pa of every progressive business. For the sake of suring a profitable practice it should become part of every fore-sighted dentist's plans for t future. It is without doubt the surest, most eas carried out means of assuring your ability meet the demands of an increased practice and replace inevitably worn-out equipment.

The depreciation account merits your earne consideration. Its use and the method of handli it are explained in the article on the next pa You will find it profitable to read and carefu study "From Your What?"

Advertise

Ritter
COUNSELOR

"From Your WHAT?"

exclaimed Dr. Daniels . . . . and thereby learned a lesson that changed his whole career . . . .

THE noon crowd that had filled the restaurant had almost gone. Daniels looked at his watch and beckoned to a waitress. "I guess my friend isn't coming. You might as well bring me my soup." The girl bustled off and Daniels opened his newspaper. He looked up when she returned and saw his tardy friend, Dr. Jones, grinning down at him.

"Sorry, I'm so late," said Jones, "but I've been making all the arrangements to enlarge my offices and put in entirely new Ritter equipment. Boy, I'm going to have the sweetest layout in the city. Why—"

Daniels put down his soup spoon. "You're going to take on larger quarters? *And* new equipment? And who was the prominent young dentist who was telling me a couple of weeks ago that he'd missed out on a collection he was counting on and that things didn't look so good? Say, this NRA Buy Now Campaign has certainly got you going. Where's your famous Scotch thrift you've always been preaching to me?"

The waitress tapped her order pad with her pencil. Dr. Jones looked up. "You can bring me the same." Then he turned to his friend again. "My Scotch thrift, as you call it, is what is buying me all my new equipment and taking care of the increased space. In the first place, the insurance people who had the next unit to mine are moving out. That leaves a prime opening for Dr. Marcy to set up his own suite—you know he's been pretty cramped lately—and the landlord has offered me Marcy's unit as a part of mine at no increase in rent. Naturally, I took it. The extra space will give me room to put in a second operatory and that special children's department I've been wanting to fix up. And while I was making all these plans, I decided I might as well fit myself out with the newest Ritter Equipment all the way through. I've always felt that a workman is no better than his tools; and you know I've had most of my present office equipment for ten years or more. Ever since I started practicing, in fact."

Daniels continued to look puzzled. "Sure. I know all that—but what I want to know, if I'm not being too curious, is where are you getting the money for all this splurging?"

"From my depreciation account, naturally." Dr. Jones calmly continued eating his chop.

"From your *what?*"

"My depreciation account. Don't you remember? We had lunch here the day you started practicing. Then I went to the bank with you while you deposited your father's check that got you off to a flying start and I urged you to start a special account for depreciation."

"I have a vague recollection of it. But I wish you'd explain to me just what you mean by the whole thing."

"All right. Here's the idea. Now . . . you've paid off your indebtedness to your father haven't you? Good. But have you paid off yourself as well? What I mean is, have you allowed for depreciation, for the progressive obsolescence of your equipment? When you started out you had an investment of about $3,000 in up-to-date dental paraphernalia. I figure that the life of any dental equipment is not longer than ten years if you want to get the maximum in service and efficiency from it. During that time, naturally, advances have been made in design and construction which you should take advantage of if you don't want to handicap yourself. That figures out that your original investment depreciates in value approximately $300 a year, or $25 a month.

"You've been practicing six years. Now if you had been depositing that $25 a month in a special depreciation account, you'd have paid yourself back more than $1,800 of your original investment. In less than four years more

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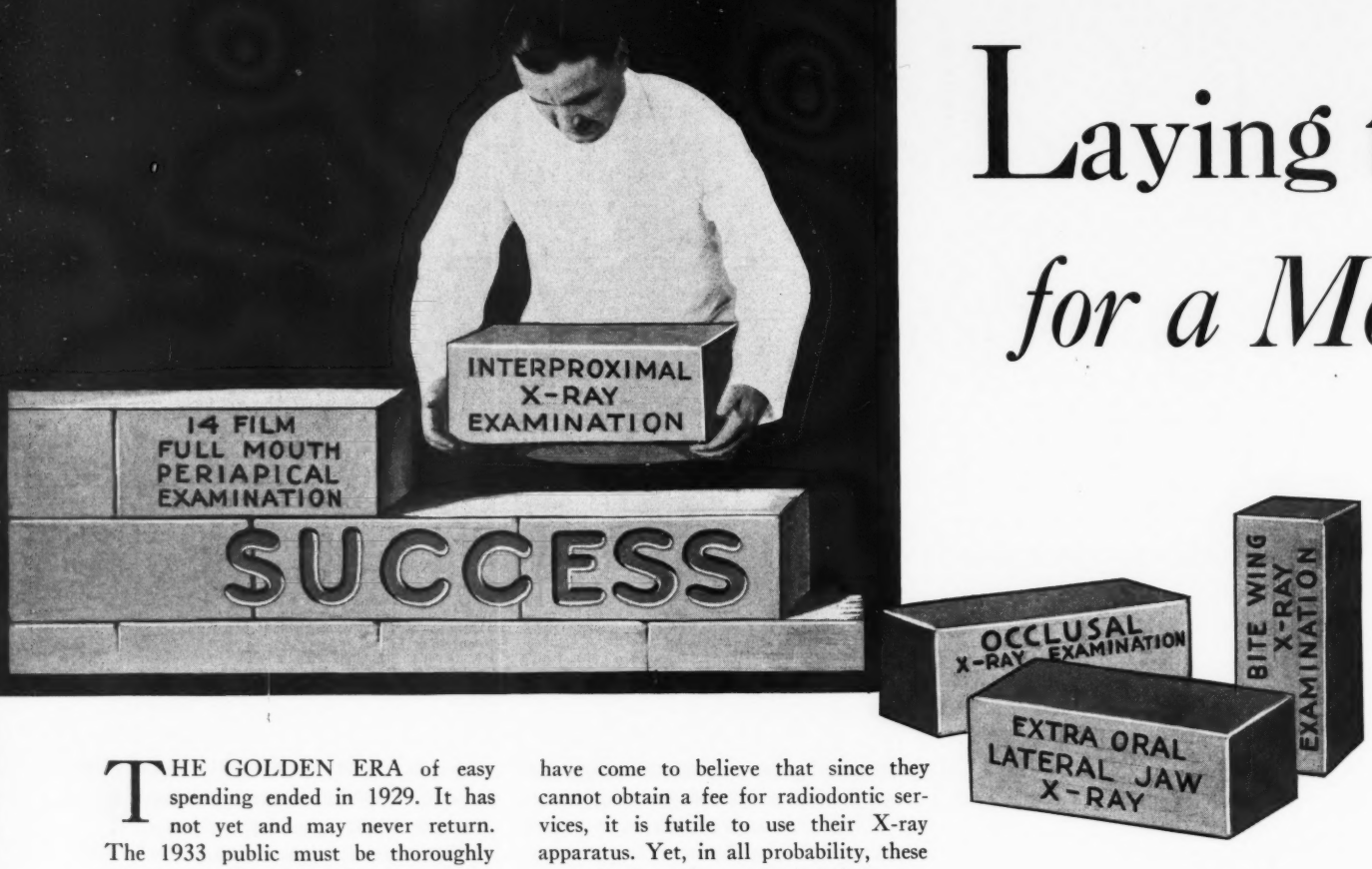
Laying the
for a More



THE GOLDEN ERA of easy spending ended in 1929. It has not yet and may never return. The 1933 public must be thoroughly sold on any idea before they are willing to spend money, a condition which is especially applicable to dentistry. It's no longer possible for practitioners to rely upon their patients' initiative to bring them to the dental office at fairly regular intervals.

The problem of making present day practices profitable is a difficult one to solve, yet it can be done if a certain amount of analysis is given to it. It's true that any dentist can have his appointment book crowded with names . . . provided he is willing to do restorative work for deferred fees or even on the basis of no fees at all. Obviously this is extremely unsatisfactory.

Consistent and thorough patient-education on the value and importance of regular radiographic examination will do much to solve this pressing problem of the dentist's diminished income. The cost of periodic X-ray examinations can be absorbed in other charges for professional services, thereby obviating the fear the majority of patients have that they are incurring a needless expense by submitting to radiographic examination.

How can this cost absorption be carried out? Look at it from this angle: Within the past years, many dentists have come to believe that since they cannot obtain a fee for radiodontic services, it is futile to use their X-ray apparatus. Yet, in all probability, these same dentists who are letting their own X-ray Units stand idle, are accepting, not once but many times, radiographs made in an X-ray Laboratory and are using them in making their diagnosis. For this service they receive no fee in exchange for all their expert knowledge, their time and the responsibility which is theirs.

The time element is another important factor which must be taken into consideration at this point. Too frequently, the dentist evaluates his time wrongly. He believes that unless he receives a direct fee for his radiographic examinations, he is not capitalizing on this factor. Yet he may be perfectly satisfied to devote from 20 to 45 minutes to a visual and instrumental examination of the mouth; do all this without being positive that he has overlooked no pathological conditions—and still receive no fee.

The X-ray need not be commercialized in ethical dentistry. It is time, however, that it is brought into more general use by all dentists, for it is the only sure way of diverting to the dental office a part of the $1,825,000,000 spent on beauty treatments every year, as well as a portion of the vast sums wasted on unnecessary luxuries. To accomplish this, the X-ray must be considered an integral part of the regular service rendered by dentists and not as something for which a special fee must be charged.

As one enthusiastic dentist points out: "If I had not received a single fee for the X-rays I have made during the past eight and a half years, the extra work uncovered has been sufficient to pay for the apparatus many times over, actual X-ray fees being additional dividends. Moreover, the use of the X-ray reassures your patients that work is being thoroughly and conscientiously done and that you are not afraid to face the facts disclosed by the radiographs. Last, but not least, you are in step with the times."

It is widely accepted that modern dentistry has reached its present high level of efficiency due to the X-ray. And it is also well-known that X-ray is undoubtedly the most logical means of building up and maintaining a profitable practice. Naturally, the dentist must be governed by the type of patient and his ability to pay before offering any form of X-ray service.

The Bite-wing examination is the one which can be used in the overwhelming majority of cases. With the Bite-wing method, using five bite-wing films, a

FOUNDATION

Profitable Practice

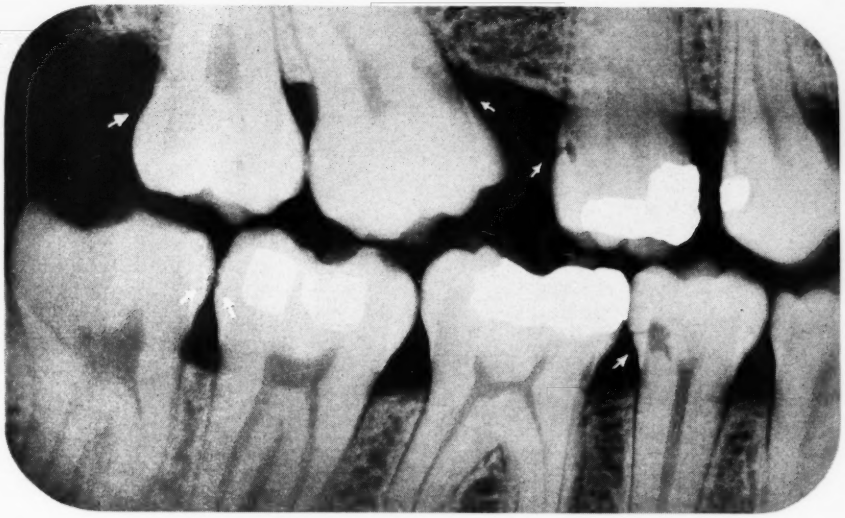


Fig. 1. Film from Bite-Wing exposure. Five films are required for complete examination.

complete interproximal examination can be made in a fraction of the time required for an instrumental examination. It is the only sure means of discovering *all* cavities, overhanging or leaky fillings, pyorrhetic conditions, pulp stones and calcareous deposits which would otherwise have remained undiscovered until the diseased condition was too far advanced to be treated by ordinary methods.

Bite-wing film interproximals are ideally suited to the means of the average individual. They are the most inexpensive form of radiographic survey and are the easiest for the layman to understand. He is more apt to be willing to undergo periodic interproximal examinations when it is explained to him that checking the condition of the interproximal surfaces of his teeth has a direct bearing upon his health and appearance. His resistance to X-ray examintion is reduced—he is not afraid that he is being made a victim of high-pressure tactics.

If dentistry's greatest responsibility is the prevention of the pulpless tooth, it is obvious that the use of the X-ray must be extended and that opportunities for periodic interproximal examination should be made available to every adult and child patient. In no other way can the ravages of dental caries and other pathological conditions be overcome at their point of origin. What is equally obvious is the fact that the conscientious use and recommendation of the X-ray is the surest solution to the problem of increasing diminished returns from any practice.

Nor is there any reason why X-ray examinations should be confined only to interproximals. X-ray examinations should be extended to include fourteen-film periapical survey to disclose diseased conditions in the area immediately surrounding the teeth and their apices. Unsuspected pathologies in the teeth, jaws and sinuses which would otherwise remain undiscovered, are often made evident by the periapical examination. It is needless to point out that these pathologic conditions are frequently the cause of more serious lesions in other parts of the human body.

The American public, in search of health, spend more than $500,000,000 annually for patent medicines. Much of this vast expenditure would be unnecessary if a competent dentist were consulted . . . and accurate radiographic knowledge of conditions in the buccal region obtained. In no other way can the layman be impressed with preventive dentistry's vital importance in maintaining general health. The radiograph is taken without foreknowledge of what will be revealed and in the majority of cases abnormal conditions are discovered which would lead to serious consequences if neglected. It is, therefore, false economy on the part of both

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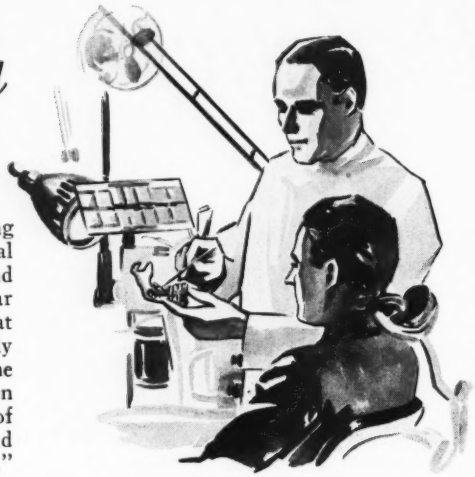
Fig. 2. 14 film (full mouth) periapical examination showing extensive pathology which caused a serious systematic disturbance.

Advertisement

Explaining the "Whys" is up to You



THE CONSTANTLY increasing number of radio skits, educational advertisements by insurance and pharmaceutical companies in the popular magazines, health talks in schools and at luncheon clubs have not been totally wasted on the American public. The average individual no doubt, has been impressed with the importance of "brushing his teeth twice a day" and "seeing his dentist at least twice a year." The old idea of going to the dentist only when driven there by pain is slowly but surely vanishing. Today, the layman knows he should see his dentist regularly —but he does not know *why* he should and *why* arresting tooth decay is vitally important to the preservation of health.

Explaining the whys is up to you. It is perhaps the most important health service you can render your patients—for while the layman realizes that decayed teeth may mean abscesses, in nine cases out of ten he does not know that a diseased tooth in his mouth may cause disturbances in other parts of his body. The connection seems too remote, too far-removed to be even plausible, let alone sensible, to him. Naturally, the relationship is obvious to you but explaining it to your patients clearly, concisely and in non-scientific language is sometimes a difficult thing to do.

A New York State dentist stated that he has solved the problem in this way. "I use the simplest analogy I can find," he says. "A cream puff—comparing the frosting on the cream puff to enamel, the pastry to dentin and the cream filling to the pulp. I explain that in the tooth as in the cream puff the enamel and dentin are simply the outer cases for the pulp and that the pulp is the most important part of the whole tooth because it is the only place in which the blood can circulate. From that point it's easy to explain the part the white corpuscles in the blood play in keeping the system healthy and combating disease germs.

"To most of my patients this comes either as completely new information or as a jog to their memories of things they learned in high school physiology—but every one of them 'sits up and takes notice.' Naturally, my next step is to describe the process of decay and to point out that if the decay spot is checked in time and prevented from spreading, the pulp or vital part of the tooth is unaffected and unharmed. Of course, I make no attempt to scare any of my patients by painting horrible pictures of what might happen if the decay is not stopped before it reaches the pulp and opens up the possibility for system wide infection.

"I simply point out that when the pulp is diseased, the pulp chamber is converted into an incubator for disease bacteria which promptly begin to multiply with startling rapidity and start pushing out at the apical end of the root. I also explain that when the disease germs and the poisons they create start to push out from the apex of the root, they are so numerous that the white corpuscles cannot overcome them—that they are carried through the body by the bloodstream to settle in whatever part of the system is the weakest. And you can take it from me it's a rare patient who doesn't get the drift here and begin to see why it's absolutely necessary for him to see me—or some dentist, at any rate—at regular six months intervals. That is—provided he wants to keep his health up to par and not jeopardize it by running the needless risk of infection from a diseased tooth."

The use of a simple analogy appears immensely effective to us. Certainly, it is a completely understandable explanation of why a semi-annual visit to the dentist should be made. And as we have already pointed out, there is probably no more important service which you can render your patients—to say nothing of its purely selfish importance to you as a practice builder.

The opening wedge for regular visits to the dentist has been planted. Use the cream puff idea to push that wedge in farther—to make your patients see why they owe it to themselves to have decay stopped at its start. Hundreds of dentists, too, have found the series of "Dental Educational Films," prepared by Ritter, to be of great assistance in educating their patients on the importance and value of periodic dental examinations.

"From Your What?"

(*Continued from page* 3)

—figuring 3% interest compounded annually—you could buy complete new equipment and be ready to expand to meet the requirements of an increased practice."

"Yes, but with things the way they are today, I simply haven't the money. Collections are too slow."

"How much have you on your books in delinquent accounts?"

"About $2,000," Daniels answered.

"Well, what I suggest is that you take those accounts which have run more than ninety days and go after them hot and heavy. In all probability you'll get a 75% return or $1,500, exactly half your original investment. Put that money in the bank in a special depreciation account. Don't touch it, but add to it every month. I'd say offhand about $30 a month would take care of the payments you haven't made in the past. It may seem hard at first, but the little amount you'll be setting aside won't be missed. And when you consider the fact that you're really making an investment in your own future, it's worth making a big sacrifice to do. Listen, can you start the account right now with—say, $50? That'll give you a sort of head start."

"Sure, I can do that. I never let my commercial account drop below $200."

"Great. Come, on, let's go over to the bank now. We'll have to hurry to make it before they close, we've chinned so long, but I want to see you start out on a new lease on your professional life." Dr. Jones called for the bill, "All set? Let's go—let's get started today for tomorrow's opportunities."

Daniels made his first deposit in his depreciation account that very afternoon and started the wheels turning for the collection of his delinquent accounts. Then, regularly each month he made a $25 deposit in his special account. At the end of four years, these regular monthly deposits, combined with the sum obtained by collecting his delinquent accounts, had reached the desired total of $3,000. He was able to replace his obsolete equipment with the most modern obtainable. He was in step with the times . . . his depreciation account had vanquished the bogey of obsolescence.

(*Continued from page 5*)

the dentist and the patient to delay radiographic examinations of the teeth. Even though the mouth were found to have no pathology of any kind, such cases being in the minority, it is far better to have rendered the radiographic service in the interest of the greatest service of all—Preventive Dentistry.

Very often a pathological state of dental origin is manifested, but owing to advanced physical injury cannot be revealed by the small bite-wing film because of the patient's inability to receive the film properly in the oral cavity. In cases of this kind the extra-oral method should be substituted. Lateral jaw radiographs should supplement the fourteen-film survey when deep-seated disturbances, like impactions, cysts and fractures are being sought. It is also an extremely good method for use with children when the development of the teeth and jaws is being watched.

Radiograph No. 3 reproduced in this article, is but one of many which show the importance of thorough X-ray examination. The patient showed arthritic and heart lesions with repeated fainting spells. After the affected teeth were removed and the patient was given post-operative treatment, he was soon restored to normal health and able to resume his daily business activities.

No less important are the child patients in whose future dentistry holds an important responsibility. The ten film survey as well as the lateral views of the jaw demonstrate how any deviation from the normal in development or eruption of the permanent teeth may be detected and corrected. Parents may be told in no uncertain terms the importance attached to the first six year molar when authentic radiographs lend their convincing impressions.

Present day conditions demand that dentistry must be made more attractive and a higher valuation be placed upon its services. To reach this goal, the X-ray must be considered as necessary a piece of equipment as are the chair, cuspidor, unit, engine or any other piece of equipment for the use of which no charge is entered on the patient's bill.

Progressive practitioners owe it not only to themselves but to their patients to make full use of the X-ray first and then to advise services which are needed by the patient. If this is done there will be less difficulty in coming to an agreement as to the payment for all professional services rendered by the practitioner.

The X-ray is a vital part of dental equipment—but it must be capable of taking authentic radiographs. Nothing short of an X-ray apparatus with predetermined factors and a standardized technic will suffice in making your problems of interpretation disappear. The Ritter Model "B" X-ray Unit is designed to overcome every objection to radiographic service and to make its use a thorough satisfaction to both the patient and the operator.

In the Ritter Model "B" X-ray Unit, every possibility for accident either to patient or operator has been eliminated. All electrical parts are completely enclosed and *fully* protected, including the tube. Protection from shock or harmful secondary rays is thereby assured. Air cooling of the X-ray Tube prevents it from becoming overheated, and special refinements in the construction and design of the tube concentrate useful rays within the most effective area, thereby assuring ample penetration in every exposure. The tube is fully energized and requires no rest periods.

An exclusive steroscopic feature enables the operator to get adequate depth in his radiographs. The vacuum filled transformer is hermetically sealed and suspended in oil and is scientifically designed to operate without violating any law of physics or electrical engineering.

Perfect balance which assures ease of manipulation and absolute rigidity; calibrated scales for duplicating; pre-reading voltmeter, low power consumption and compactness of design make the Ritter Model "B" X-ray Unit unrivalled for efficiency and ease of operation.

Dentists in all parts of the country have found from their own experience that no other X-ray Unit brings them as many advantages as does the Ritter Model "B." If you have not yet familiarized yourself with this new Ritter X-ray Unit we will be glad to furnish you with complete details of this truly remarkable achievement in X-ray Unit design. Descriptive literature will be sent promptly upon receipt of a letter or postcard.

3. Radiograph showing ced abnormal condi- where it was next to ible to obtain satisfac- intra-oral radiographs to facial paralysis.

Fig. 4. Lateral jaw radiograph of child showing erupted six year molar with early loss of deciduous bicuspids.

Fig. 5. Lateral jaw radiograph of same child showing use of space retainers as a preventive measure against malformation.

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A Sensational New Automatic Sterilizer

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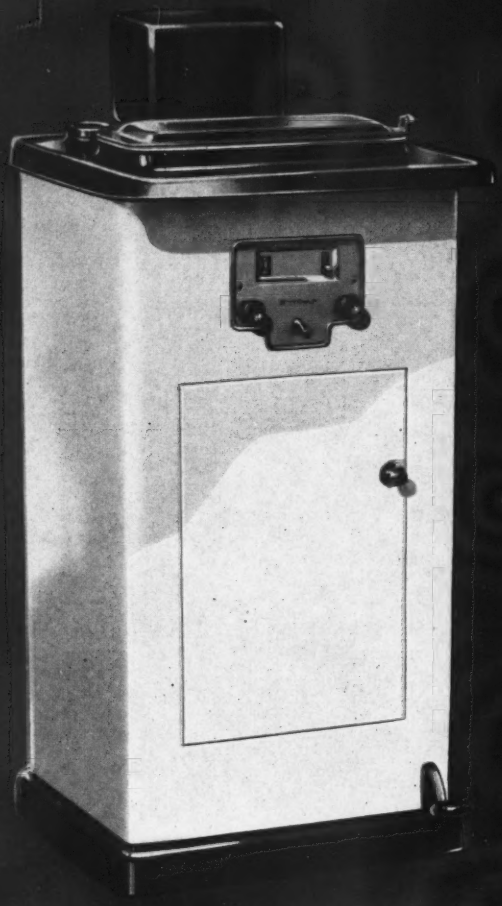

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RITTER DENTAL MANUFACTURING CO., INC.
ROCHESTER, N. Y.

NEGATIVE IMPRESSION TECHNIQUE AND CAST BEADING

WILLIAM A. COLBURN, D.D.S.
San Francisco

MANY theories have been given for inadequate retention of a maxillary denture, which may be partly correct, but to be able to diagnose a difficult case in advance from the standpoints of a classification of arch form and tissue height or attachment is uncertain for the reason that tissue depth and resilience seem to be more important than the shape and size of the arch or height of the soft tissue attachments. As an example, a large symmetrical maxillary arch with a thin and tensely drawn mucous covering may be unfavorable, whereas a small arch, low ridge and low tissue attachments, with a thick mucosa will respond favorably to almost any one of the many impression techniques, the only exception being a technique that displaces too much compressible tissue with the result that the patient complains that it feels as though the denture were dropping, necessitating its being reseated either by biting or by finger pressure.

It would seem, therefore, that the dentist in making a diagnosis of a difficult maxillary case can almost disregard the size and shape of the arch and the tissue attachments and confine his observations, first, to a digital examination of the depth and texture of the soft tissue, and second, to the interpretation of the complete alveolar roentgenogram, which, when properly made, will not only reveal the depth of the soft tissue covering the alveolar bone but will show the shape and condition of the underlying alveolar process and any residual pathologic condition, retained roots or unerupted teeth.

According to Leonard Frank, roentgenologist, it is rather hard to give any set rule for a technique to bring out the soft tissue appearance owing to the differences in x-ray equipment and the manner of measuring penetration. A general procedure would be to use a penetration equivalent to a 3 inch spark gap and a 24 to 30 inch distance. A five to seven second exposure with 25 milliamperes should give a roentgenogram with soft detail so necessary in roentgenograms of edentulous mouths. The film should be developed carefully and not carried too far, as a dark negative or one that is over developed will not show the soft tissues and fine needle points of serrated bony ridges.

Selection of Trays and Materials for Impressions

Trusol was used as an impression material in the experimental work and continued in practice as it is uniform in its setting and does not require salt or other drugs to hasten or retard the setting and therefore does not give off as much heat as plaster. Any good impression plaster, however, may be used.

Tight fitting trays are not indicated, but should be about one-fourth inch larger all around. It should also be noted whether the posterior part of the palate is arched or square across as the tray should conform to the shape of the palate.

Preparation of the Mouth Before Impression Taking

If the patient has a tendency to gag, the throat should be sprayed with a 2 per cent solution of butyn.

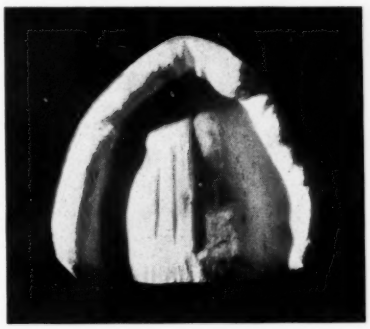

Fig. 1—Negative impression complete.

A mark is made in the mouth with an indelible pencil showing the exact position of the posterior border of the denture; the torus of the palatal bone and other relief areas should be outlined in the mouth and all of these marks are transferred to the impression.

Negative Maxillary Impression

The purpose of taking an impression of the edentulous maxilla is to get an exact reproduction or a perfect cast. This must be done without displacing, distorting or compressing any of the soft tissues. To my knowledge the only technique of taking an impression without displacing or compressing the tissue is the negative or plaster technique. If a perfect impression is obtained the retention and relief can be taken care of later.

The tray selected is filled with a thin mix of plaster (Trusol recommended), placed in the mouth, and rotated as it is being seated so that the air is forced out. Sometimes, in deep vaults, it is necessary to place soft plaster with the finger or spatula before conforming the remainder of the material. It is important that the plaster be very thin, especially when the ridge is soft or flabby.

Treatment of Impression

All relief is taken care of in the impression after it is removed from the mouth. These places are shown by the outline of the indelible pencil. The impression is relieved over the hard palatal bone, tuberosities, and the median line at the central teeth,

Fig. 2A—Cast of impression outlined.

Fig. 2B—Cast showing retention technique for the soft palate region.

and any other bony prominences that might become sore from external pressure. Fig. 1 shows the negative impression complete.

Treatment of the Cast

The cast of the impression poured in a good artificial stone is shown in Figs. 2A and 2B. The outline of the denture is obtained by placing a pencil parallel to the cast and marking the periphery of the flanges from the median raphe to the tuberosity, across the palate to the opposite tuberosity and then to the median raphe on the opposite side. Outlining a case in this manner is more accurate as a rule than muscle trimming, especially if the material is heated, and it is just as sure as the knife trimming technique. Fig. 2A shows the cast outlined.

Peripheral retention from the median raphe and including the tuberosity is accomplished by scoring the cast with a sharp instrument 1 mm. deep on the line representing the top of the rim of the denture and then scraping to the bottom of the groove, blending toward the crest of the ridge to allow for slight reduction of the denture rim (Fig. 2A). The cast in Fig. 2B shows the retention technique for the region of the soft palate. It is in this area that retention is either maintained or lost. To get positive retention and seal in the posterior palatal region a groove is made 2 mm. deep from the tuberosity to two-thirds the distance to the median line on both sides and then the two grooves are joined about 1 mm. deep over the middle third. The deeper grooves are blended anteriorly about 10 mm. for more positive pressure. The roofless beading is placed from tuberosity to the region of the anterior third and then the two grooves are joined with another beading about 4 mm. anterior to the posterior border seal or post-valve.

The finished denture, in addition to a positive post-valve, will show four aprons, which greatly aid in maintaining a vacuum without injury or discomfort to the soft tissue.

This system of beading, in conjunction with a negative impression, gives excellent results in partial dentures, especially dentures that restore the posterior teeth back of the maxillary six anterior teeth, without clasps and without covering the entire palate (Fig. 4).

The open-face, or denture where it is indicated to grind the six anterior teeth to the gum tissue, will also have adequate retention if this beading technique is used.

Beading the Cast

1. Peripheral retention is obtained by scoring the cast with a sharp instrument around the entire peripheral outline of the denture. A groove is cut 1 mm. deep (Fig. 3, A).

2. To secure retention in the region of the soft palate and to get positive retention and a seal a groove is made 2 mm. deep from the tuberosity to two-thirds the distance to the median line on each side (Fig. 3, B). These grooves are joined with a groove 1 mm. deep over the middle palatal third (Fig. 3, C). The deep grooves are blended anteriorly about 10 mm. for more positive pressure (Fig. 3, D).

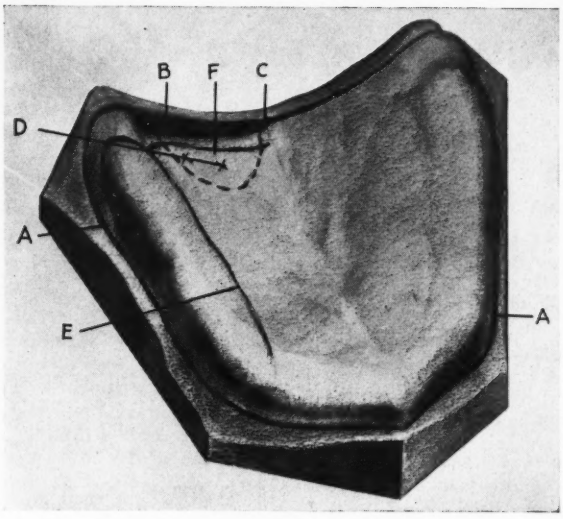

Fig. 3—A, Groove, 1 mm. deep, cut in cast; B, groove, 2 mm. deep, to secure positive retention and a seal, cut from the tuberosity to two-thirds the distance to the median line on each side; these grooves are joined with a groove, 1 mm. deep, over the middle palatal third (C). The deep grooves are blended anteriorly about 10 mm. for more positive pressure (D). E, roofless beading placed from tuberosity to region of anterior third; F, two grooves joined with another beading about 4 mm. anterior to the posterior border seal.

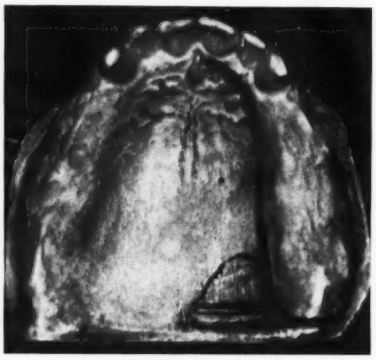

Fig. 4—Beading with negative impression for partial dentures.

3. The roofless beading is placed from tuberosity to the region of the anterior third (Fig. 3, E), and then the two grooves are joined with another beading about 4 mm. anterior to the posterior border seal (Fig. 3, F).

Negative Mandibular Impression

All mandibular impressions may be considered difficult after the teeth have been removed a number of years. One reason for this is that, although the alveolar bone is absorbed and the space filled with soft tissue, the width of the mandible in its entirety remains the same, and if a proper technique is used the outline or width of a second or third case will vary only slightly from the first or pre-denture. However, when the so-called muscle trimmed technique is employed the outline or width of the case will vary in proportion to the ability of the patient to make the facial distortions or protrude the tongue, and the depth and number of times the material is heated by the dentist and returned for trimming.

This condition is noticeable when a patient wishes a new denture in the belief that the early post-extraction denture is rather loose, and the patient receives a muscle trimmed denture that is not as comfortable or efficient as the inexpensive old one

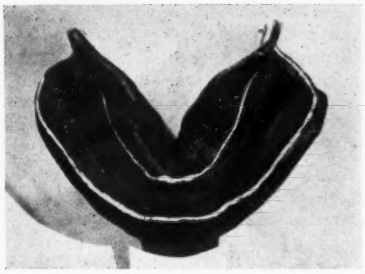

Fig. 5—Stretched snap impression.

Fig. 6—Cast made of stretched snap impression shown in Fig. 5.

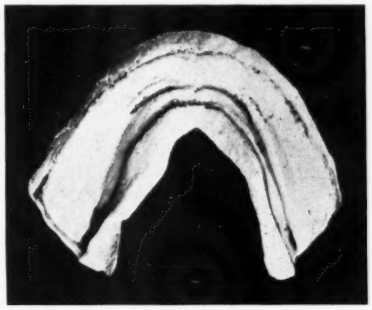

Fig. 7—Good negative impression.

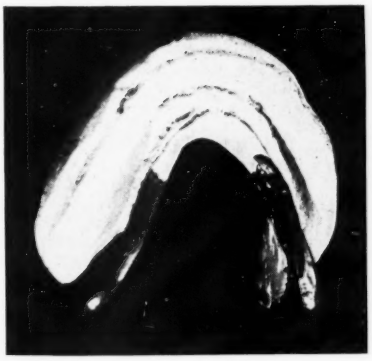

Fig. 8—Throat lock or mylohyoid ridge extensions.

The reason for this situation is that when the first impression was taken, the ridge was large and the outline easily recognized. In the second impression, the height of the ridge changed and was replaced by loose soft tissue which would muscle trim the case too narrow. The denture, therefore, would ride the convex surfaces of the mandible causing the troublesome sore spots, which have to be continually relieved, and resulting in a denture that has the appearance of a miniature instead of a replica of the mandibular surface. In addition to the obliterated ridge and consequent excessive soft tissue, the case may be complicated by a troublesome thick tongue.

A mandibular impression, I believe, should (1) cover a little more than the width of the mandible, and include a large part of the retromolar triangle; (2) the soft tissue should remain as near its normal position as soft plaster can leave it. Retention may then be secured by the "throat lock" or extension under the mylohyoid ridge, and peripheral beading. Sharp bony prominences and excessive soft tissue hypertrophy which may cause soreness may be relieved from 1 to 2 mm. deep in the impression before pouring.

Technique of Negative Mandibular Impressions

1. A large tray is selected and filled with a large amount of modeling compound, inserted at a temperature of about 120°F. which will give a stretched snap impression (Fig. 5).

2. A cast made of this stretched impression (Fig. 6) will be used to fit a tray for the plaster or negative impression, and also to ascertain the exact outline of the denture. The tray should be fitted about one fourth of an inch larger all around, and the ends should be turned up so they will not impinge on the tissue in the retromolar triangles.

3. A thin mix of a good impression plaster is made, and the tray and inaccessible places in the mouth are filled with the plaster; the filled tray is vibrated to place and held until the material sets. The results should be a good negative impression (Fig. 7); that is, an impression in which the soft tissue is in its normal position and also one that includes the full width and length of the mandible and many times extending under or below the mylohyoid ridge. Throat lock, or mylohyoid ridge extensions can be made on the plaster impres-

Fig. 9—Cast scraped 1 mm. deep and from 3 to 5 mm. anteriorly from the end of the denture outline to secure additional pressure in the retromolar triangle.

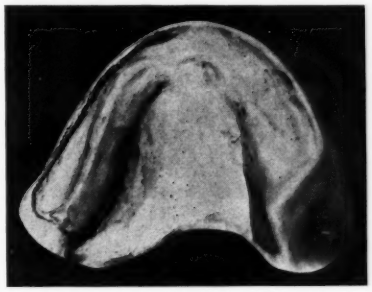

Fig. 10—Double beading under the mylohyoid ridge.

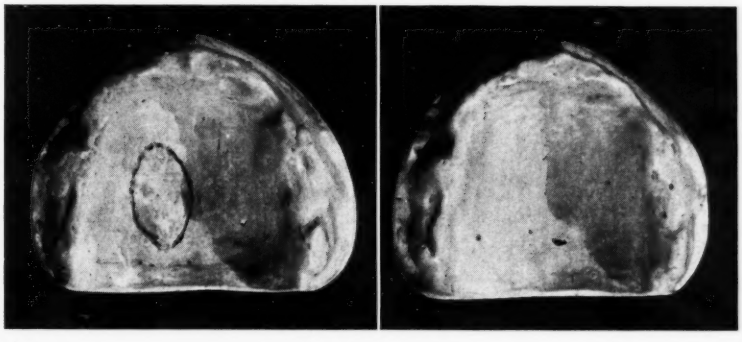

Fig. 11—Cast of plaster wash maxillary impression showing tissue displacement on the left, and on the right, the cast of the same case made from a straight plaster impression without tissue displacement.

sion by trimming up the lingual flanges and adding black compound on one side, and breaking it off and adding a like one on the opposite side and then replacing the first (Fig. 8).

4. A cast is made and by comparing the negative cast with the positive study cast (Fig. 6) an accurate outline for the mandibular denture can be scored on the cast with a sharp instrument (Fig. 9). The base plate can then be made to this mark and the outline in the mouth at the time the bite is registered.

Dentures constructed from mandibular impressions taken by this technique are not only comfortable, but most of them show as much if not more retention than the average upper impression, and considerably more if the patient is able to wear the throat locks.

Retention of mandibular impressions is increased by beading the periphery of the cast about 1 mm. deep and blending from 2 to 3 mm. toward the crest of the ridge. Additional pressure is placed in the retromolar triangle by scraping the cast 1 mm. deep and from 3 to 5 mm. anteriorly from the end of the denture outline (Fig. 9).

When the throat lock is used and there is some doubt of the patient's wearing it, a second light beading may be placed just under the mylohyoid ridge which will act as a guide in case the lock has to be removed and the case converted back to the outline of the original negative impression. Fig. 10 shows the double beading under the mylohyoid ridge.

The cast of a plaster wash maxillary impression (Fig. 11, left) shows considerable tissue displacement, and on the right is seen the cast of the same case made from a straight plaster impression without tissue displacement.

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LETTERS TO THE EDITOR

"I am greatly pleased with THE DENTAL DIGEST. It helps me a great deal in my daily practice because it is like a private instructor coming to me.

"It benefits me in the way that it contains the modern works and technics in the dental profession not taught me while I was in college. I do not forget to read it during my spare hours."—DR. DAMASO A. DIMAZAN, *Batangas, P. I.*

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"Please renew my subscription to THE DENTAL DIGEST. I am sending my personal check for $2.00. If in case my remittance is late, please send the copy missed. With best wishes and highest praise for THE DENTAL DIGEST."—HASKEL C. HART, D.D.S., *Dixon, Illinois.*

"I don't want to miss a single issue so please see that my renewal subscription is taken care of. You sure are publishing the first dental magazine of all time."—HARRY E. CRADDOCK, D.D.S., *Fullerton, Calif.*

"In your September, 1933, issue the article on 'Roofless Dentures' by Doctor L. A. Hawkes refers to 'good condyle formations.' Just what does *condyle* here refer to? The meaning I get is that it should refer to the maxillary tuberosities. *Condyles* I have always taken to refer to that part of the mandible which forms the articulation at the temporomandibular joint."—A. SINGER, D.D.S., *Saskatoon, Saskatchewan.*

ANSWER—In the Hawkes article, "good condyle formations" is anatomically incorrect. A condyle is a rounded eminence at the articular end of a bone and cannot in any sense be used synonymously with the maxillary tuberosity,—*Editor.*

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS, OF AUGUST 24, 1912

OF THE DENTAL DIGEST AT PITTSBURGH, PA. — Published Monthly For October 1, 1933

State of Pennsylvania, } ss.
County of Allegheny, }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared M. B. Massol, who, having been duly sworn according to law, deposes and says that he is the Publisher of THE DENTAL DIGEST, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, publication manager, and business managers are:

Name of—	*Post office address—*
Editor, E. J. RYAN, B.S., D.D.S.	708 Church Street, Evanston, Ill.
Publisher, M. B. MASSOL	1005 Liberty Ave., Pittsburgh, Pa.
Publication Manager, R. C. KETTERER	1005 Liberty Ave., Pittsburgh, Pa.
Business Manager, J. J. DOWNES	1005 Liberty Ave., Pittsburgh, Pa.

2. That the owners are:

DENTAL DIGEST, INC.	1005 Liberty Ave., Pittsburgh, Pa.
ORAL HYGIENE, INC.	1005 Liberty Ave., Pittsburgh, Pa.
M. B. MASSOL	1005 Liberty Ave., Pittsburgh, Pa.
LOUISE A. SMITH	Schenley Apts., Pittsburgh, Pa.
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3. That the known bondholders, mortgages, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

M. B. MASSOL, *Publisher*

Sworn to and subscribed before me this 24th day of September, 1933.

E. G. BURGDORF, Notary Public

[SEAL] (My commission expires March 6, 1935)

The Editor's Page

AT THE Memphis meeting of the American Dental Association, The Dental Editors Club was founded. Membership in this organization was open to the editors of all dental publications. Doctor C. N. Johnson (*Journal A. D. A.*) was the first president of the club and Doctor Rex N. Douglas (*Journal Indiana State Dental Association*) was the first secretary.

During the recent Chicago meeting the third annual session was held at which time Doctor Elmer S. Best (*The Dental Survey*) delivered a clarifying address, "The Present Status of Dental Journalism." By official action of the Dental Editors Club this paper was recommended for publication and appeared in the October issue of *The Dental Survey*.

Because dental journalism in general, and independent dental journalism in particular, has been violently criticized and condemned, Doctor Best's direct, logical, objective and intelligent presentation of the subject should be read with interest by the profession. The fact that the classification of dental journals as independent and official (society publications) was by unanimous vote of the Dental Editors Club accepted as official would seem to suggest that dental editors are not ready to accept another classification from an extraneous source. That is to say, the classification of dental journals as being proprietary and nonproprietary is not accurate and therefore not acceptable.

At the risk of being considered pedantic, we find upon the examination of the word "proprietary" that it comes from the Latin *proprietarius* meaning an owner or a thing owned; that is, property. All dental journals, whether they are society publications or independent journals are property and, therefore, proprietary. The common meaning, of course, of proprietary is a given thing subject to exclusive ownership. Title to a property may be held by an organization, by a person, or by a corporate body. *Who holds* title to anything—land, buildings, a publication—does not interest most of us as much as *what* the title holder does with his property.

If property is used for honorable purposes and for the "greatest good for the greatest number," we will all probably agree that it represents a GOOD. Conversely, if property is used without regard for other property and human rights, it may be called an EVIL. The test, then, whether a dental journal, or any other tangible property, is worth while is not *who* owns it, but to what *use* it is put. In the case of a dental journal, if it furthers the cause of the profession by presenting scientific facts, important information, and is quick in the defense of professional ideals and standards, it will survive and is worth while. If a dental journal does not present facts and has any alliances that are alien to the professional interest, it will and should fail. In the final analysis the intelligent reader determines the issue, not in terms of *who* owns a publication but *what* it does for him.

To the average reader, in this case, the average dentist, dental journals are either good or bad, interesting or dull, valuable or worthless. A classification of proprietary or nonproprietary is, to the average dentist, of academic interest. But what he wants and demands, and should receive, are journals that will supply him with facts to help him in the immediate affairs of clinical practice, and not slight him in a world of abstruse research; that will give him pertinent glimpses of personalities and events in dental life; that are instructive, authentic, and interesting. If such journals are the official publications of dental societies or are independent journals he will support them regardless of ownership. If a dental journal is stuffy, lurid, sensational, unauthentic, tedious, it will not be read.

How the dentist receives his dental journals: as part of society dues, by subscription, or gets them free is of no importance in their classification. Whether he reads them or not and finds them valuable or not is the test.

Societies, committees or commissions can set up standards as the members of such organizations view them, but no organization or person can make dentists read what they do not wish to read. So long as dental editors keep their readers' problems and interests in mind (particularly, the interests of the average group), and direct their efforts to them, dental journalism is safe. But let editors forget their readers' rights, allow themselves to be regimented and standardized, intimidated or exploited, dictated to or controlled, and the case for healthful dental journalism is lost.

Independent dental journalism is more than a classification; it is a necessity to protect the profession from any danger of a hierarchy of dental politicians or reformers with the collateral dangers of favoritism, partisanship, clique control, sectionalism.

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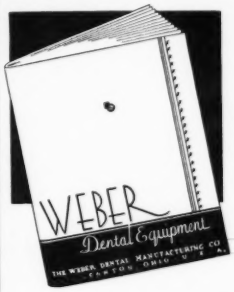

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The INDEX TO DENTAL PERIODICAL LITERATURE for the years 1927-1929, published by the Dental Index Bureau under the auspices of the American Institute of Dental Teachers, is now ready for distribution. This is the eleventh volume of the series; the volume covering the period from 1906 to 1910 will be ready about April 1, 1934, which will complete the series from 1839 to 1930. The price of the present volume is $6.00. To all points outside the United States and Canada it is $6.50. Communications concerning this valuable index to the dental literature should be addressed to Doctor Abram Hoffman, 311 East Chicago Avenue, Chicago, Illinois.

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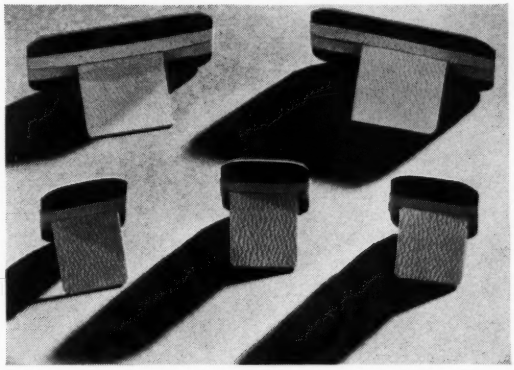

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The Type 1 packet now lists at 65¢ per dozen; the Type 3 at 85¢ per dozen. Three Type 1 films and two Type 3 comprise the complete examination. At 5.4¢ each for the former and 7.1¢ each for the latter, the film cost is only 30½¢.

No change has been made in this Eastman patented product. The films have the same special dental emulsion and the packets, designed by Howard R. Raper, D.D.S., originator of the *Bite-Wing* examination, remain as before.

For thorough preventive dentistry, a complete *Bite-Wing* examination is necessary at each periodic appointment. Eastman Kodak Company, *Medical Division*, Rochester, New York.

EASTMAN *BITE-WING* X-RAY FILM

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ACCOMPLISHMENT

TRADE BS MARK POLISHERS PATENT NO. 1277020

You derive a great deal of pride in your accomplishment when a completed restoration pleases the patient. Or when an extraction is a difficult one and you finish the job without any apparent pain to the patient. Do you derive equally as much satisfaction from your prophylaxis cases? You should because prophylaxis is, in a majority of cases, the keystone of dental practice.

Many patients judge the dentist by the type of prophylaxis he renders. Therefore, you want to be certain that you are doing this type of work in the most effective manner. You unquestionably know the WHY OF correct dental prophylaxis but perhaps you are finding it difficult to know just HOW to accomplish it most effectively.

We suggest the use of BS POLISHERS. We know they are the best you can obtain and to prove this to you we would like to have every practicing dentist give BS POLISHERS a trial at our expense. Use the sample polisher according to directions and the result will be a thorough cleansing which is guaranteed to please the patient. And BS POLISHERS are gentle too. They will not harm the most delicate tissues. **Along with the sample polisher we shall be glad to send you reprints of articles which tell how to medicate the gums effectively.** They are instructive.

The coupon on page 452 is for your convenience. Clip and mail it at once.

YOUNG DENTAL MANUFACTURING COMPANY

4958 Suburban R.W. St. Louis, Missouri

IT IS AN ACCEPTED FACT

ALL GOOD WIRE IS "SELF-HARDENING"

It is a common physical property of all good wire to harden with manipulation. This is due to the nature of the alloy used and the manner in which it is finished for use. This "self-hardening" phenomenon can be an advantage, or a disadvantage. It means, merely, that the wire becomes harder, i.e., more brittle, in proportion to the amount of cold shaping involved . . . With some wires, too much manipulation may render the restoration fragile (brittle) and unsatisfactory.

To avoid this, all Williams Clasp Wires are furnished, ready for use, in their *softest annealed condition.* This makes manipulation easy, and assures maximum tenacity in the finished restoration. It means too, that additional heat treatment—especially in Clasp Wires No. 1, 2, 3, 6—is not necessary.

Only Williams Wire Is Annealed Under Hydrogen

Added to the special "softest-annealed" advantage of Williams Wire is the *Williams Process* which melts the alloy inductively and stirs it magnetically—then performs the finishing heat treatment electrically *under hydrogen atmosphere.* The *Williams Process* is unique in dentistry, assuring an absolutely pure alloy, perfectly uniform, non-oxidized and not contaminated.

The WILLIAMS GOLD REFINING CO., Inc.

San Francisco, Calif. BUFFALO, N. Y. Fort Erie, N., Ont.

A WIRE FOR EVERY PURPOSE

No. 1 Platinum Color

No. 2 Platinum Color

No. 3 Gold-Platinum Color

No. 4 Gold Color

No. 5 Light Gold Color

No. 6 White-Gold Color

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ALL GAGES
FOUR SHAPES

- HALF-ROUND
- ROUND
- OVAL
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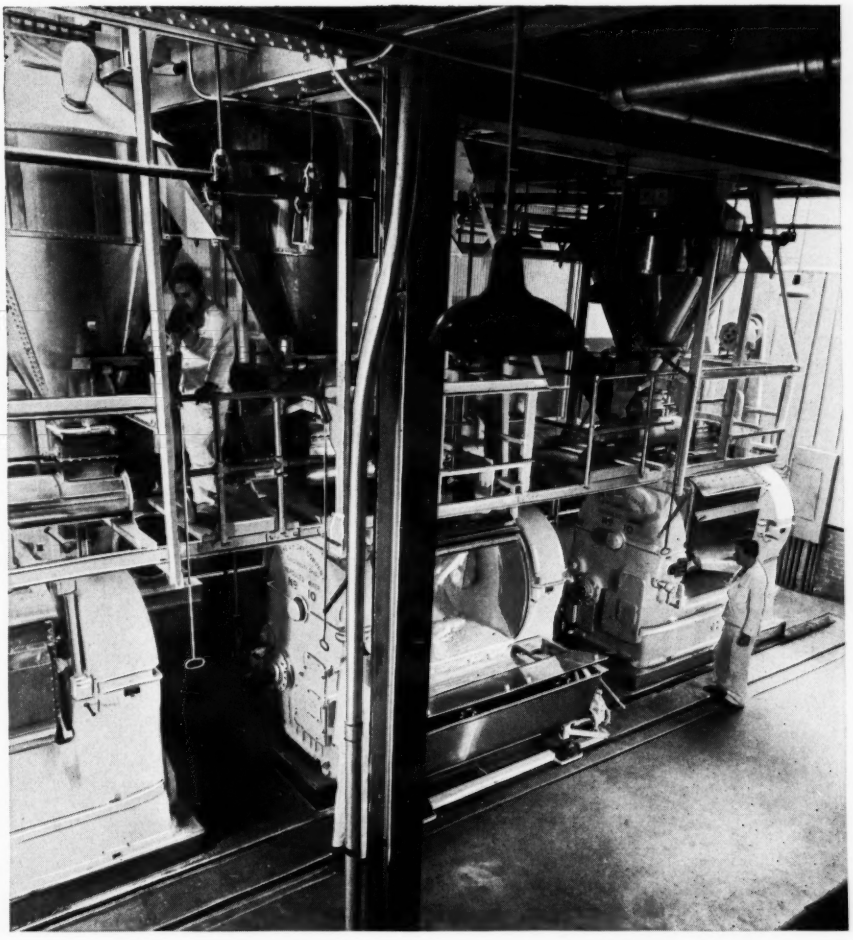
Ask your Dealer for the Handy Chart on Williams Clasp Wire

WHEN YOU ORDER GOLD . . . SPECIFY WILLIAMS



BACK STAGE AT PEPSODENT

THE photographer caught a dramatic perspective of the modern new Pepsodent plant. Here you see 3 giant mixers. They are open for the purpose of this picture. Otherwise they are closed tight when in operation. The making of tooth paste today requires the complete collaboration of science and engineering. The Pepsodent Company sets high manufacturing standards.

THE PEPSODENT CO., CHICAGO

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Confidence

vs

UNCERTAINTY

To have one main purpose and to serve that purpose well, has been the policy of our Company for 122 years.

Foremost in our minds has been the consideration of the best interests of our customers. Today, more than ever, that is our aim and practice.

THE J. M. NEY COMPANY

GOLD LICENSE NO. 224

Hartford, Conn. **Chicago, Ill.**

Your Patients Will Welcome This Extra Service

WHEN extensive instrumentation, extractions, temporary or new dentures, bridge abutments make gums sore and mastication difficult, your patients expect you to answer this question—"What Can I Eat?"

They are probably already somewhat debilitated as a result of dental disease—they need added strength and stamina to withstand further dental treatment.

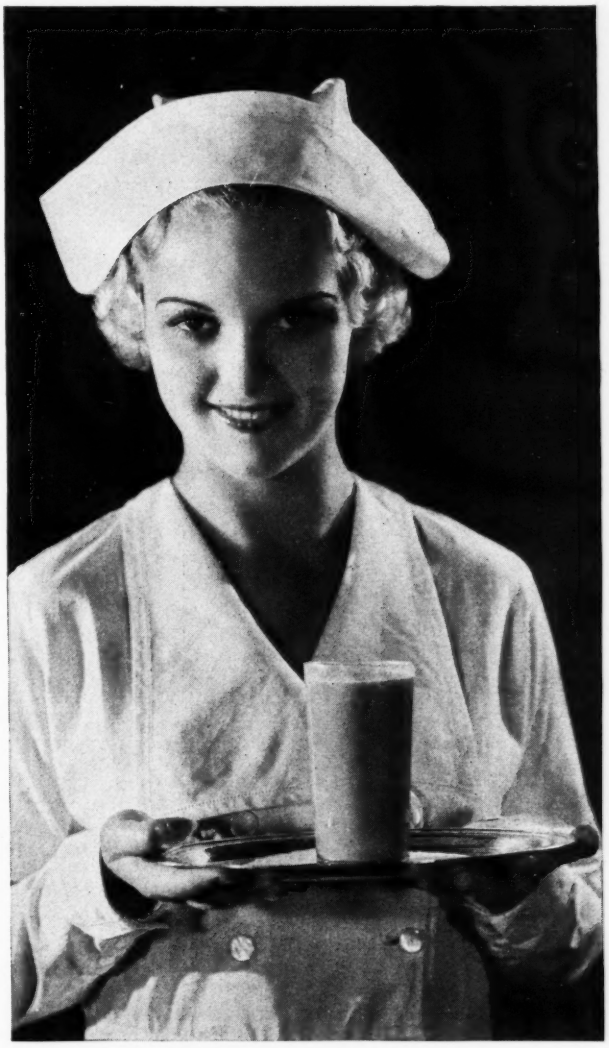
"Food-in-a-Drink"

Earn the gratitude of such patients by suggesting OVALTINE as a diet reinforcement. Think what OVALTINE can do for them. It requires no mastication. It imposes no strain on digestion and yet it is rich in proteins, carbohydrates, fats and minerals, notably iron, calcium and phosphorus.

OVALTINE not only makes cow's milk more palatable but it actually increases its nutritive value and digestibility.

As a Nightcap

Nervous patients appreciate the value of a warm drink of OVALTINE, taken just before retiring, to induce sound, healthful sleep.



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Send it in together with your professional letterhead, card, or other indication of your professional standing, and some samples of OVALTINE *will be gladly sent to you.*

OVALTINE

The Swiss Food-Drink

Manufactured under license in U. S. A. according to original Swiss formula.

This offer is limited only to practicing physicians, dentists and nurses.

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Dr.....

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Canadian subscribers should address coupons to A. Wander, Limited, Elmwood Park, Peterborough, Ont.

Or use coupon on page 452

"Do Unto Others"

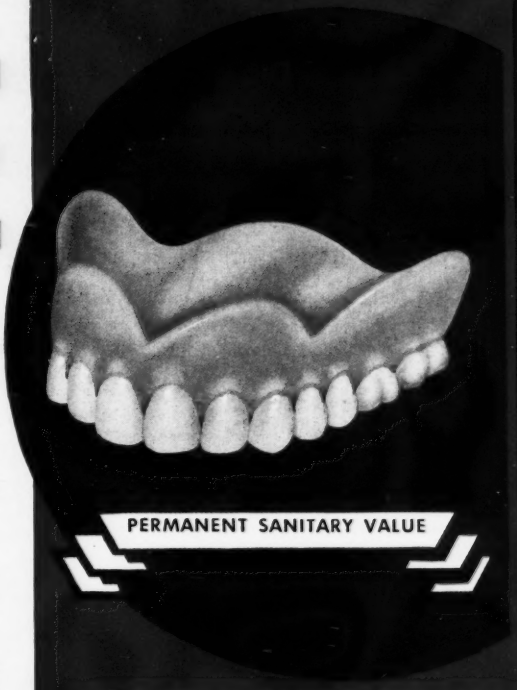
This will be the happiest Christmas for many people. Laughter will have a new ring, voices a new confidence. Share some of your joy by using Christmas Seals on your letters, packages, gifts and cards. The gay little stamps will brighten your message. The funds they provide will help prevent, find, and cure tuberculosis throughout the year.

The National, State *and* Local Tuberculosis Associations *of the* United States

BUY CHRISTMAS SEALS

THERE'S ONLY ONE BAKELITE DENTURE MATERIAL... AND THAT IS...

LUXENE



What BAKELITE Means to Industry
LUXENE Means to Dentistry

● So infinite are the uses of Bakelite in industry that virtually everyone benefits both directly and indirectly from its application in various forms to the needs and conveniences of modern life. . . Just as in the industrial and technical fields Bakelite has practically displaced vulcanite and other plastics suitable only for novelty use, so will Bakelite (Luxene) supersede vulcanite and these other plastics in the field of prosthetic dentistry — not only in the production of new cases, but in the replacement of millions of unsightly and insanitary dentures now in service. . . Remember, there are other synthetic resins, but only one BAKELITE. Be sure every Luxene denture you order is delivered in the original fawn colored LUXENE container.

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A THERMO-CURING, PHENOLIC RESIN
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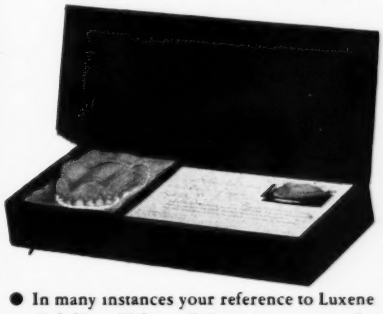
THE
LUXENE
DEMONSTRATOR



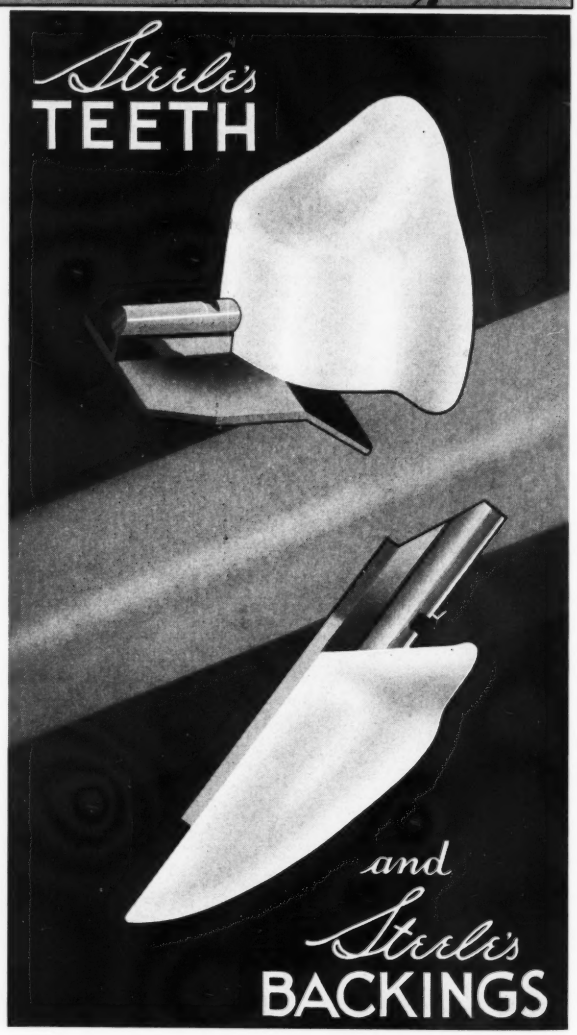
● In many instances your reference to Luxene as *Bakelite* will be sufficient assurance to the patient of its accuracy and stability of form, its immunity to stain, its freedom from taste or odor, and its durability under stress and strain. But unless he has seen a Luxene denture, he cannot visualize its remarkable resemblance to natural gum tissues. That's why you will find it helpful to have a specimen denture on hand. It will enable you to point out also the porcelain-like density and hardness and the "baked-on" union with teeth which give Luxene that outstanding advantage so vital to the comfort and health of the patient—its *permanent sanitary value.*

LUXENE DEMONSTRATOR
Comprising a Specimen Denture and Fifty Ethically-Worded Announcement Cards for Denture Patients.
Your Dealer or Laboratory Can Supply It

There's Only One COMBINATION *That's Right*

THE success of a bridge made with Steele's Facings or Trupontics depends greatly upon the strength and fit of the backings used.

The makers of Steele's Teeth would not care to guarantee against faulty bridgework where any other backing than Steele's has been used. All Steele's standard precious metal backings are stamped with the Trade-Mark *Steele's* under the end of the post.



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You Get EXTRA VALUE *in the* *New Cutwell* No. 18 ASSORTMENT

THE inclusion of a dozen special "L" burs—eight different types designed especially for the exacting requirements of inlay and crown-preparation work—further enchances the value offered by this popular 18-dozen assortment with its free 1-gross Bakelite case... Here's an inducement for you to familiarize yourself with the advantages of New Cutwell performance.

Ask your salesman about it.

Set of Twelve SPECIAL INLAY BURS Included in Place of Regular Crosscuts AT NO EXTRA COST!

With its 12 dozen plain burs, 6 dozen crosscuts and distinctive Bakelite bur case, all for less than the price of the burs alone at quantity rates, the No. 18 Assortment always has meant a worthwhile saving for the dentist. Now, with the special "L" burs substituted for a dozen of the regular crosscuts, it actually represents

A $19.80 Value for $15.00

Two Assortments $29.00

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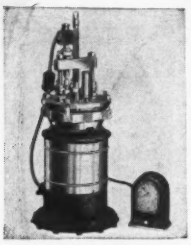
You'll LOSE—if you try to handle the new Improved Denture Materials in an Antiquated Vulcanizer . . . . . .



Delicately colored, accurate dentures come from sturdy, precision-built equipment. New Buffalo Dental Vulcanizers and Flasks are made for *today's* requirements. If in doubt about your vulcanizer, send for our new Bulletin. It illustrates and describes the equipment you NEED.

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The Pelton & Crane Company, Detroit, Mich.

Pelton "Simplex" Sterilizer

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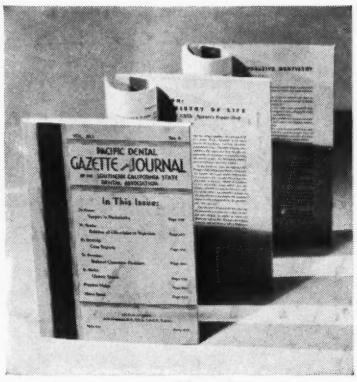

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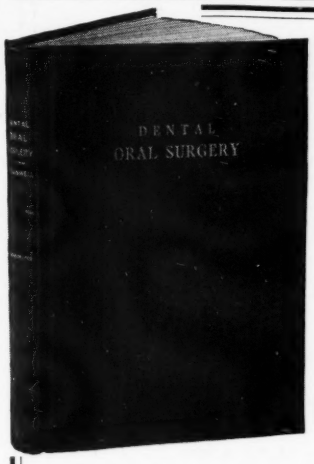
VYDON *A Lee Smith* PRODUCT



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Successful local anesthesia requires not only correct injection, but also adequate preparation of the patient and sufficient postoperative care.

PREMEDICATION: Nervous and hypersensitive patients become good patients when a sedative has been given them. Cook Analgesic Tablets are made especially for dental use. Excellent sedative and analgesic: recommended for preoperative and postmedication. Obtainable only by dentists from dental supply houses.

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Waite's Solution for Sterilizing Jars. Non-irritant, compatible with all local anesthetics. For keeping needles and syringes ready for use, and for Cook Cartridge Jar.

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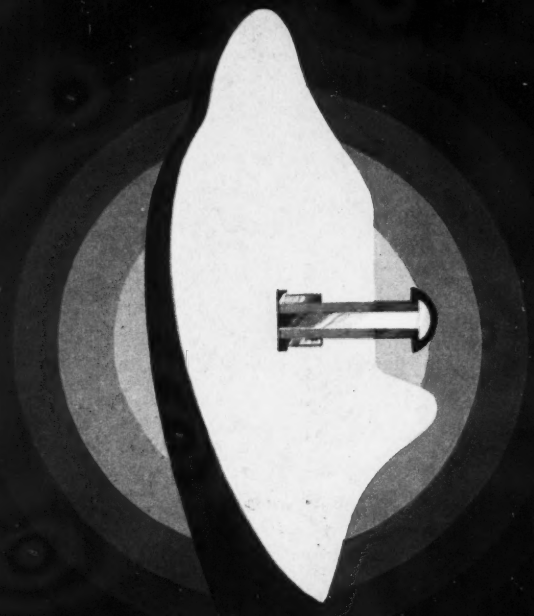

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